AUGUST 11, 1997 VOLUME 14, NUMBER 32

Network World

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

GORE PORN FLAP

VP used to promote racy Web guide. Page 6.

BUYER'S GUIDE: 100BASE-T SWITCHES

Don't get burned

100Base-T switches are hotter than a Phoenix sidewalk in August, but they don't all live up to the hype. We evaluated nine models and found some chilling prices and lukewarm performers.

But don't despair. Our hands-on tests also identified three switching stalwarts — Hewlett-Packard Co.'s AdvanceStack Switch 800T, Cisco Systems, Inc.'s Catalyst 5002 and FORE Systems, Inc.'s modular ES-3810. When it came down to pure price/performance, the AdvanceStack earned our Best Buy designation.

There are plenty of additional factors to consider when you choose a switch, including configuration options, switch-to-switch connectivity and interoperability. You'll find shopping suggestions and an accompanying product chart that delivers the lowdown on features to explore.

REVIEW: PAGE 37 ISSUES AND TRENDS: PAGE 41 PRODUCT CHART: PAGE 41

Novell's Border Manager wins early raves

By Christine Burns

Novell, Inc. has been roundly criticized for its late arrival to the Web game, but the company may have itself a winner in Border Manager.

Participants in a closed beta test said the software suite provides an easy-to-administer way of granting end users controlled but quick access to 'Net resources. Border Manager consists of proxy caching, security control and virtual private network (VPN) services, all linked with Novell Directory Services (NDS) for management purposes.

"It's about time they came up with something this slick. They need a strong product to get them back in the game," said George Moser, network analyst

See Novell, *page 52*

Apple's survival: What's at stake for the net industry?

Macworld EXPO

By Chris Nerney

Money, strategy and competition. Oh, and money.

These are the main motives of the two high-tech heavyweights — each with conflicting agendas — who are attempting to rescue Apple Computer, Inc., analysts said.

The major players are Bill Gates, whose Microsoft Corp. is investing $150 million in Apple,

See Apple, *page 52*

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Access Network World Fusion using the number in yellow. See page 5 for details.

Microsoft thinks thin

Windows-based Terminal blueprint nears completion.

By John Cox
Redmond, Wash.

Microsoft Corp. is putting the finishing touches on a Windows-based Terminal (WBT) blueprint, its second major attempt to build an alternative to the Java-based network computer.

The WBT will come with minimal software and memory, and will access applications running on a special Windows NT server. The final design guide is being created with substantial help from vendors that already sell terminals for accessing Windows applications servers.

This is a thinner client than the proposed Microsoft-Intel NetPC, a closed but full-featured PC that boots off a server. The terminal design will now serve as Microsoft's "official" thin client.

The WBT will be based upon Windows CE 2.0, the next version of the company's 32-bit, streamlined operating system, sources confirmed. CE, which was originally designed for hand-held computers and similar

See Terminal, *page 53*

Network World Fusion 3321

Get more info online:

- A look at how network computers will affect LAN traffic
- A Microsoft white paper that compares all its Windows variants, including the WBT

WWW.NWFUSION.COM

Cabletron strongman exits

By Tim Greene

When Cabletron Systems, Inc. cofounder Bob Levine slips into retirement Dec. 1, the industry will lose one of its most colorful characters.

There are so many great stories about him. He arm-wrestled comedian Joe Piscopo at NetWorld+Interop. He crashed his tank into a tree one night. And he painted his brand-spanking-new, custom-built luxury yacht battleship-gray.

Corporate lore holds that Cabletron once lost a contract with a New Hampshire bank that maintained an automatic teller machine at Cabletron's Rochester, N.H., campus. As the story goes, Levine drove home, rode back in his Humvee, hooked up a chain to the ATM and ripped it out of the wall. He then broadcast a voice mail

See Levine, *page 14*

Levine antics

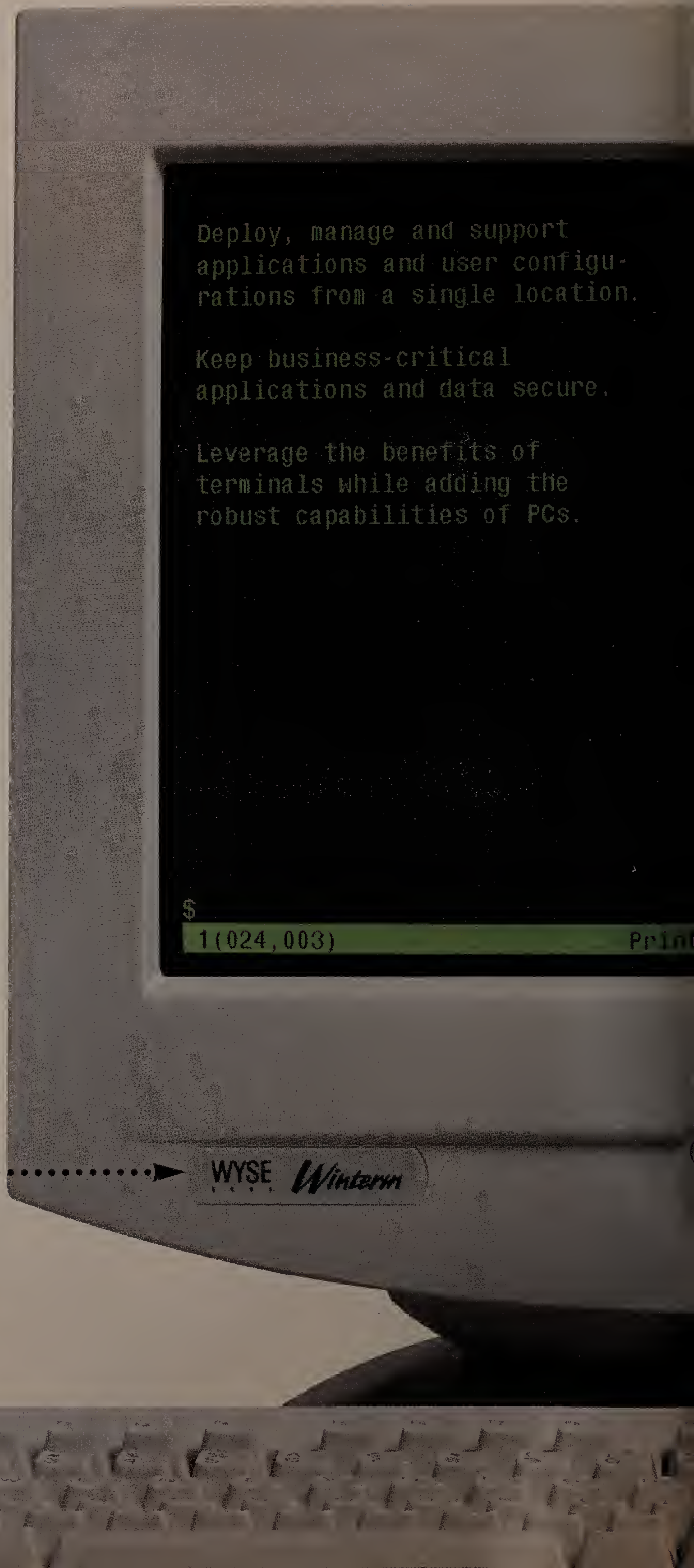
Bob Levine takes on comedian Joe Piscopo.

MORE LEVINE LEGENDS:

- He crashed his personal tank into a tree.
- He brandished a hunting knife to pump up the sales staff.
- He ripped out an automatic teller machine with his Humvee.

Q&A One-on-one with Bob Levine. Our interview, page 14.

What do you call a terminal that opens Windows?



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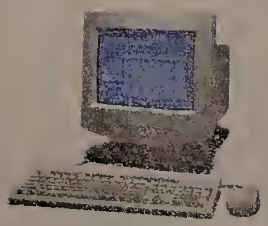

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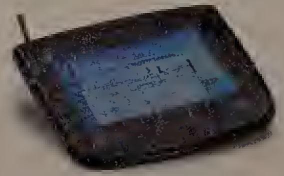

Winterm 2930
Wireless hand-held portable.

* "*Desktop Clients—A Cost of Ownership Study.*" Spring 1996, Zona Research Inc.

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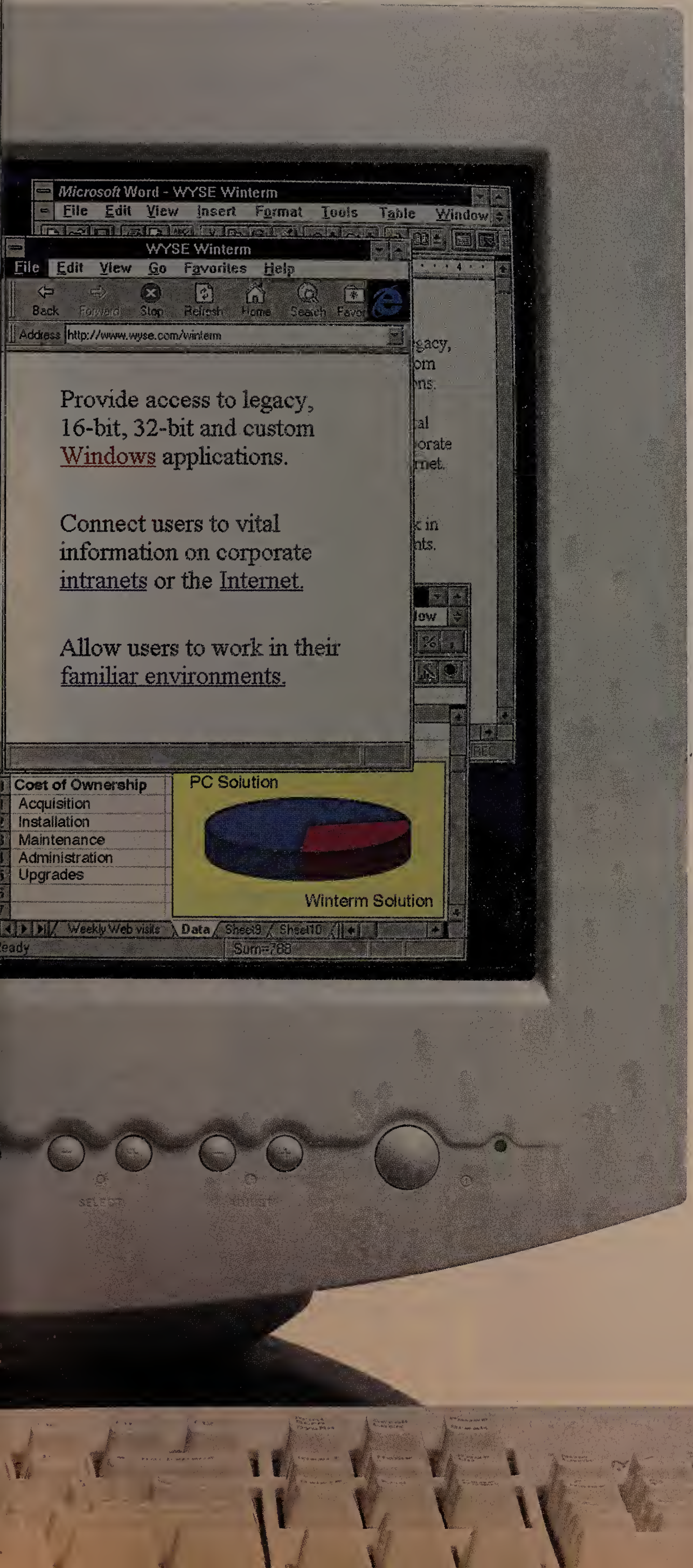
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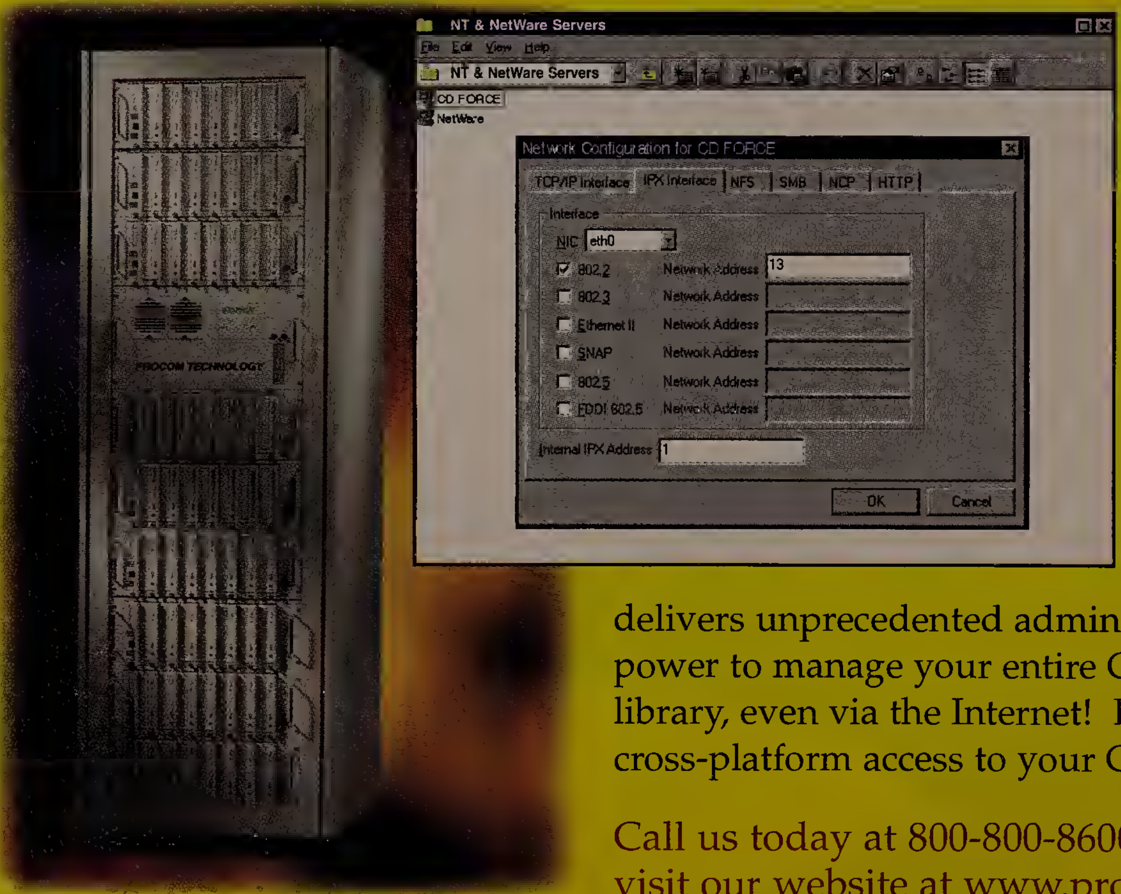

NIC: eth0

☑ 802.2 Network Address: 13
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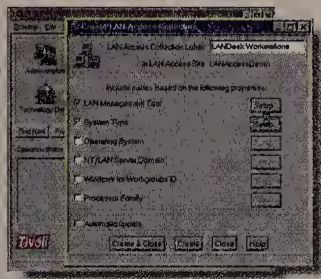
KODAK FOCUSES ON E-COMMERCE

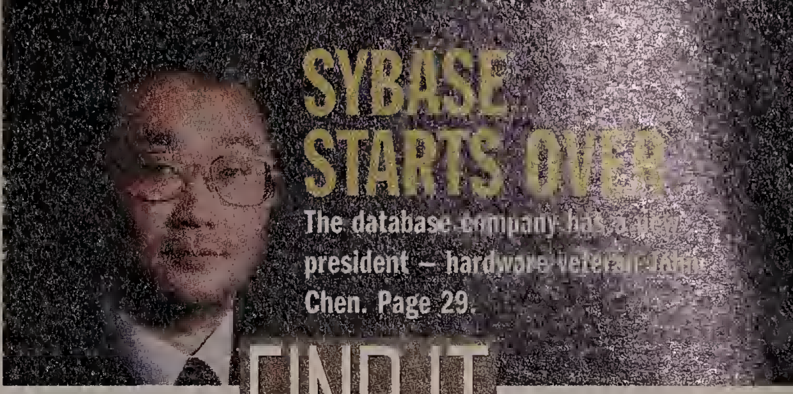
Photography firm turns to the World Wide Web to sell cameras. Page 29.

PHIL MATT



TIVOLI TAG TEAMS WITH INTEL

Together, they've produced a workgroup management tool called TME 10 LAN Access. Page 10.



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100BASE-T SWITCHES

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This Week

Only on Fusion

New column. We won't soon see the likes of Bob Levine again, writes Fred McClimans.

In the first of his exclusive "Keeping Current" columns, McClimans pays tribute to the outgoing Cabletron CEO — one of the few really colorful characters in networking and somebody who was smart enough to know when to get out of the way. Come to Fusion every week for McClimans' networking insights. **DocFinder: 3324**

Buyer's Guide

100Base-T switches. Read our buyer's guide and review (page 37) this week, then come online to find just the right switch for to you. Using our interactive guide, narrow your switch search from among several dozen devices. Plus, see how we tested the chosen switches. **DocFinder: 3312**

Tech Update

Spam Block. On page 33, you'll find tips on keeping spammers from hijacking your SMTP server. Log on to Fusion for info on everything from antispam proposals for the latest version of sendmail to how to track down a spammer's real address. **DocFinder: 3319**

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News briefs, August 11, 1997

Clinton names Hundt's successor

■ President Clinton last week tapped William Kennard, the Federal Communications Commission's top staff lawyer, to succeed Reed Hundt as the agency's chairman. Clinton had earlier nominated Kennard to fill one of the open slots on the five-member commission. Kennard must be confirmed by the Senate before taking office.

Kennard

Kennard's current principal duty as FCC general counsel is to defend the agency's decisions in court as a result of nearly inevitable lawsuits by disgruntled carriers. Hundt has lauded Kennard's record in improving the overall percentage of cases the FCC has won in court, but that is largely because of the FCC's success in defending its regulation of cable TV rates — a particular area of expertise for Kennard, who used to work for the National Association of Broadcasters. By contrast, many of the FCC's recent key telecom decisions have been partially or totally overturned by courts.

Looking for links in all the wrong places

■ American Internet Corp. has submitted a draft specification for a Dynamic Host Configuration Protocol (DHCP) server-to-server protocol to the Internet Engineering Task Force. Currently, DHCP servers, which dynamically dole out IP addresses, cannot communicate to synchronize addressing operations. The draft document can be viewed at www.eng.american.com/dhcp/draft-ietf-dhc-interserver-02.txt.

Intel wakes up

■ Intel next week will announce it has OEMed IBM's Token Ring and Ethernet Wake On LAN packages for use in Intel's LAN adapter family. Wake On LAN, developed by IBM's Networking Hardware Division, lets administrators power-on remote PCs and make systems and management changes without the user being present. Intel products using the technology should be available later this year.

Beyond Java

■ Marimba, Inc., of Palo Alto, Calif., has added the first non-Java feature to its Castanet line of push software products. Like other Castanet products, UpdateNow enables users to distribute, update and manage applications written in the Java programming language. But the software also can handle applications written in C, C++, Microsoft's Visual Basic and other languages. UpdateNow includes a $995 server-side transmitter and free client software. It is available now.

Informix makes a $100 million blunder

■ Informix Corp. last week said it made a multimillion dollar error. The company is as much as $100 million short of its reported $940 million 1996 revenue. Some of its 1996 revenue should have been deferred to subsequent periods, the company said in a statement last week.

So it is possible that Informix may have lost money in 1996 instead of turning the $97.6 million profit it reported. Meanwhile, things do not look too good this year, either. The company has reported a net loss of $120.5 million for the quarter ended June 29.

Netscape joins security party

■ Netscape Communications Corp. last week announced it joined nine other companies, including Bull Worldwide Information Systems and Chrysalis-ITS, to rally behind RSA Data Security, Inc.'s Public Key Cryptography Standard for smart cards and hardware tokens.

Netscape also announced that its recently launched Communicator 4.0 Internet communications package works with digital certificates stored on a smart card or hardware token adhering to the RSA standard.

UPS strike is trouble for net managers

Rival shipping companies' networks pushed to max; online retailers feel the effect.

By Paul McNamara

Network managers and Webmasters were among those ducking the fallout after drivers for United Parcel Service of America, Inc. walked off the job last week.

Electronic commerce dependent on old-fashioned package delivery slowed to a crawl as a result of the Teamsters union's strike.

Among those most affected were:

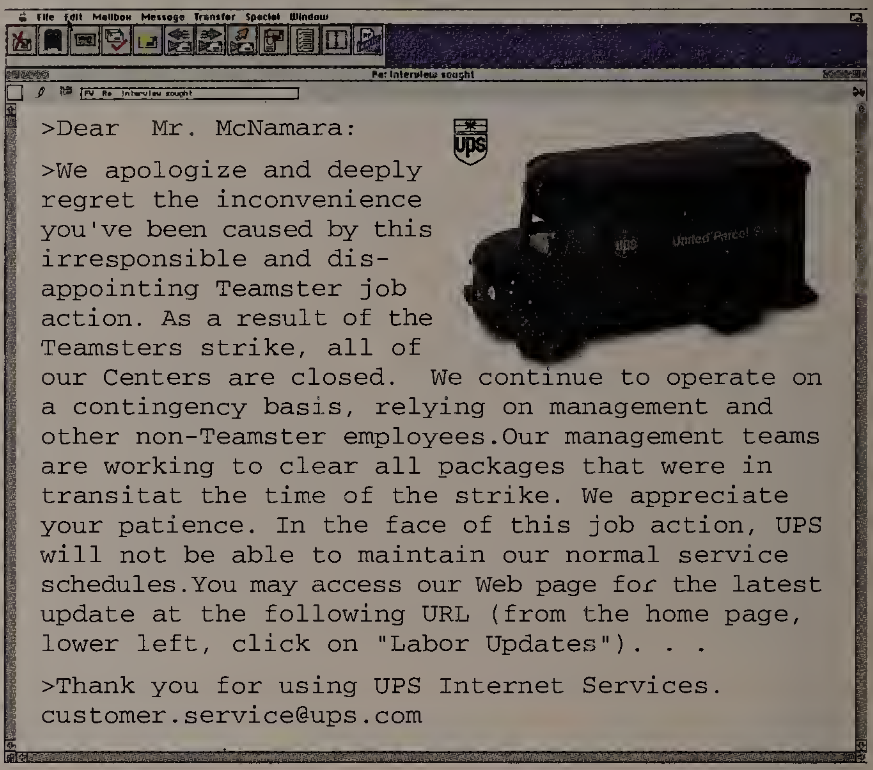
- UPS competitors such as Federal Express Corp. and Airborne Express, which, when asked to assume the unliftable extra load created by the strike, found their networks and telecommunications systems strained, if not overmatched.
- Web managers for major online retailers such as Amazon.com and L.L. Bean, which had to post warnings notifying shoppers that long-standing delivery assurances were not worth the HTML they were written in.
- Corporate IT departments at companies such as National Semiconductor Corp., of Santa Clara, Calif., which, because of the strike, was concerned about its ability to fulfill 2,000 daily online requests for sample products and sales literature.

Traffic on the FedEx Web site was up 50%, with most of the added burden coming in the form of File Transfer Protocol (FTP) requests from people looking to download FedEx customer software.

"We noticed we were starting to have some bandwidth constraints, so we moved our FTP server load from a T-1 line over to a T-3 line," said Susan Goeldner, manager of Internet technologies at FedEx.

Telephone calls were the challenge at Seattle-based Airborne. "This week has been nuts," said Allen Edwards, director of systems development.

Airborne's order center normally handles 180,000 calls per day, with only 2% to 3% going unanswered, according to Edwards. Last week, the order center successfully fielded an additional 50,000 calls daily. However, upwards of another 300,000 would-be customers were hanging up before getting through.



>Dear Mr. McNamara:

>We apologize and deeply regret the inconvenience you've been caused by this irresponsible and disappointing Teamster job action. As a result of the Teamsters strike, all of our Centers are closed. We continue to operate on a contingency basis, relying on management and other non-Teamster employees.Our management teams are working to clear all packages that were in transitat the time of the strike. We appreciate your patience. In the face of this job action, UPS will not be able to maintain our normal service schedules.You may access our Web page for the latest update at the following URL (from the home page, lower left, click on "Labor Updates"). . .

>Thank you for using UPS Internet Services.
customer.service@ups.com

Under the circumstances, you might think those callers would understand, right?

"They don't," Edwards moaned. His shop and those of other package movers were busy adjusting computer programs to reflect earlier drop-off deadlines and altered schedules.

At the strike's epicenter, UPS network managers said they were being inundated with Web traffic and e-mail, but added that their systems were holding up well under the strain. The package carrier, however, was forced to curtail its online tracking and drop-off site locator services.

"On Monday, the first day of the strike, our hits essentially doubled to 4.6 million," said Joan Schnorbus, public relations supervisor at the UPS technology headquarters in Mahwah, N.J. E-mail volumes also were doubled, she said.

A few companies were attempting to make lemonade out of UPS's lemons.

On its Web site, for example, Peter Pan Bus Lines, Inc., of Springfield, Mass., was unabashedly courting UPS customers with an invitation to try Peter Pan Package Express.

There were even a few stabs at strike humor, such as this posted message from Now and Zen Productions, an online T-shirt shop:

"We ship Internet orders by U.S. Mail, so the UPS strike won't come between you and your shirts. The Men in Brown can't let us down!" ■

Did VP Gore really endorse a 'Net porn guide?

By Ellen Messmer

Washington, D.C.

Vice President Al Gore, who opposes Web pornography, is the poster boy for a book that happens to list interactive sex videos sold on the 'Net? Impossible?

Apparently not. New York-based publisher Hi-Tech Media, Inc. is featuring Gore in its marketing hype to promote the *Multimedia Source Book,* which contains ads for porn videos and CD-ROMS within its large list of other, less controversial items.

You may have recently spotted a larger-than-life photo of Gore smiling down upon the milling crowds from the Hi-Tech Media booth at the recent Internet World 97 show in Chicago. Pictured in promotional handouts about the *Multimedia Source Book,* Gore says, "This will strengthen the information superhighway."

However, the *Multimedia Source Book,* available in print or in database form on the Web, is nothing but a collection of advertising, some free and some paid, mostly CD-ROM, video and computer gear.

If you look at the *Multimedia Source Book* database over the Web, you will find no listings under "furniture" or "banks." But in the "adult" section, you'll

See **Gore,** *page 10*

HOW DID WE BECOME A LEADER IN FAST ETHERNET HUB TECHNOLOGY IN JUST A YEAR?

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B) SUPERIOR PRODUCTS C) CAFFEINE

D) ALL OF THE ABOVE

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Sparks fly over Domino starter pack

Lotus and business partners at odds over applications and sales tactics.

By Paul McNamara
Cambridge, Mass.

A branch of Lotus Development Corp.'s vaunted army of business partners is in rebellion over a new set of free applications the software maker began shipping last week with Domino Intranet Starter Pack.

The rebels claim Lotus is taking food off their tables by unleashing a competitive, albeit low-end, product backed by marketing muscle the business partners cannot hope to match. In a worst case scenario, they said starter pack could drive third-party applications from the marketplace, depriving customers of choices and, in some cases, clearly superior software.

Lotus insisted the starter pack applications are in no way designed to compete with its partners' products. Rather, they are intended to provide an out-of-the-box answer for small-to-midsize businesses that, until now, have considered the Domino Web server beyond their expertise and means.

The applications in question

Bundled in Domino intranet Starter Pack, these are among the 12 applications causing friction between Lotus and its business partners:

.domino
Intranet Starter Pack
Solutions for Growing Business

Document Library — Gives employees 24-by-7 access to company policies and procedures.

Company Forms — Houses expense and travel forms.

Discussion — Provides employees with a forum for projects and industry issues.

Project Management — Tracks project and task input from multiple sources.

Contact Management — Records business interactions among prospects, vendors and customers.

The uprising is limited to a handful of companies, Lotus said, while the majority of business partners recognize an expanded marketplace for Domino as a welcome opportunity.

However, the partners that are up in arms put their ranks at some two dozen. An Aug. 1 meeting between Lotus officials and the unhappy partners at Lotus' Cambridge, Mass., headquarters apparently did little to settle the dispute.

"Their Intranet Starter Pack, as we view it, is actually a competitor to one of our [office automation] products — Business in a Box," said Dean Reiber, marketing manager at Emerging Technology Solutions in Greenwood Village, Colo. "If we're business partners and we're on the same team, how do we cooperate and compete all in the same realm?"

As Lotus does battle with messaging/groupware rivals such as Microsoft Corp., Netscape Communications Corp. and Novell, Inc., the company depends on — and often boasts about — its 15,000-strong business partner community. So any dissension in the ranks is a potentially serious matter.

A spokesman at Casahl Technology, Inc., of Danville, Calif., confirmed his company is "leading the charge" among the business partners against the starter pack, although Casahl officials declined to be interviewed. One participant of the Cambridge powwow quoted a Casahl executive as likening his company's plight to that of "an abused child" who is thinking about leaving home: "You're damned if you do, damned if you don't."

While acknowledging that Lotus "didn't do a good job of explaining" starter pack applications to its partners, a company spokeswoman said "there's enough room for many different [application] offerings to come to fruition and become successful" within the Domino environment. The partner applications that Lotus considered for inclusion in starter pack were deemed too high-end, prompting Lotus to offer its own, she said.

That line of reasoning does not wash with some partners.

"Those [starter pack applications] are products that we sell at $10,000 a server copy, and they're going to give them away for free," groused an executive at one business partner company, who requested anonymity.

The long-term implications for Lotus may prove to be more troubling than this current partner dissatisfaction.

"When they go down this road of developing apps, a bunch of business partners are in the path of the steamroller and others are watching to see who gets squished," said another executive, who requested anonymity.

At this point, Lotus has offered its partners "nothing concrete" to allay their worst fears, said Jerry Smith, president of Changepoint Corp., of Richmond Hill, Ont., maker of an application hosting platform called involvHost. "The business partner jury is still deliberating," he added.

At least one business partner is more sanguine about the prospect of competing against starter pack. Potential customers will recognize the added value of going with InfoImage, Inc.'s Instant I*Net intranet application suite, said Jon Michaels, vice president of sales and marketing at the Phoenix-based firm. "We're willing to wait it out in the weeds," he said. ■

Antispammers take matters into their own hands

By Denise Pappalardo and Todd Wallack

The attack has been called off, the troops have retreated back to the trenches behind their PCs, and UUNET Technologies is taking a deep breath.

After getting slammed with a "Usenet Death Penalty" (UDP), the canceling of all postings from a particular source, UUNET stepped up its antispamming practices by weeding out unauthenticated Usenet postings, using filtering and other software tools. The Internet service provider also will no longer relay third-party mail to non-UUNET destinations.

Fed up with UUNET spam, a loose coalition of 20 system administrators last week unleashed an army of cancelbots against UUNET.

Cancelbots are programs that automatically delete Usenet postings by forging cancel messages in the name of the authors. Normally, they are used to delete postings by known spammers, but in this case, they were set to attack any message posted from a uu.net address.

"We're cautiously optimistic" that the spamming trouble on Usenet is improving, said Sean Fagan of San Jose, Calif., who has run a Usenet node for eight years.

He said UUNET spam has slowed from a flood to a trickle since last week.

UUNET stepped up its antispamming policies just days after CEO John Sidgmore blasted the antispammers for "digital terrorism." UUNET officials said they have referred the matter to law enforcement agencies and are considering taking civil action.

"We were watching the level of spam increase, and we had already come to the conclusion that we were going to have to take more severe measures [to stop it]," said Alan Taffel, vice president of marketing and business development at UUNET. "We were planning to do this anyway. The [death penalty] just accelerated our timetable."

In any case, the impact appeared to be minimal. The vast majority of UUNET's customers post under their own domain name or that of another ISP.

This appears to be the first time a concerted effort has been made to block postings from an entire ISP. But the UDP has long been a threat tossed around heated newsgroup discussions about spam.

In fact, Bell Atlantic Internet Solutions received UDP threats about six weeks ago and took them seriously, said Larry Plumb, the company's director of communications.

After receiving many complaints from customers and other Internet users, the regional ISP changed its terms of service and anti-spamming policies, he said.

Now users are not given a warning if they are suspected of spamming. Instead, their accounts are terminated.

Bell Atlantic Internet Solutions also is more actively using filtering software to ward off future spam attacks, Plumb said.

GTE Internet Solutions, a UUNET customer, is taking measures to ensure its customers are not spammed by enforcing its antispamming policies and by using Software.com, Inc.'s InterMail e-mail servers throughout its network.

GTE is deploying the InterMail servers to handle increased traffic demands and use the server's antispam filtering capabilities.

The server can block Simple Mail Transfer Protocol connections from specified IP addresses and messages based on specific senders' return e-mail addresses (*NW*, June 23, page 9).

GTE supports more than 100,000 of its Internet customers on UUNET's backbone. While GTE said its customers were not affected by the UDP attack last week, the ISP was apprehensive and discussed the attack with UUNET.

"Our customers were quite concerned when they first saw the death penalty [notice] on Friday," said Kim Odom, a product manager at GTE.

"But we haven't seen an effect on our subscribers or cancelled Usenet postings," she said.

Online Editor Adam Gaffin contributed to this article.

See what you can do to keep spam off your Web site in this week's Technology Update section. Page 33.

Be a
NET KNOW-IT-ALL
For the answer to this week's question and more net trivia, **visit Network World Fusion** and enter **2349** in the DocFinder box.

GET THE ANSWER Now

This week's question:

Sprint President Ron LeMay left the carrier "in the dumps" last month by taking over the reins at what non-network company?

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The newest survey rates HP #1 for customer satisfaction in distributed systems management.

In a recent Computerworld* survey which rated satisfaction with distributed systems management vendors, Computer Associates and IBM/Tivoli didn't quite make the cut. The first choice: HP OpenView, which scored tops in every category including Overall Satisfaction, Quality, Cost of Ownership, Comfort with Vendor, and Service and Support.

With this latest recognition, HP OpenView has extended its award-winning leadership in network management to become the customer-preferred solution for system management as well.

These IT professionals surveyed already know that HP OpenView provides everything needed to ensure that mission-critical IT services are up and running — a responsibility that's definitely top on their lists. HP OpenView gives the IT staff immediate access to the status and performance of their business-critical applications as well as the complete computing infrastructure. As a result, HP OpenView assures the high availability critical to the success of any business.

So if you've been entrusted with managing crucial information services, choosing the right partner is now a bit simpler. HP OpenView...a cut above the rest.

HP OPENVIEW

*April 21, 1997

CompuServe and OpenConnect to offer remote mainframe access

By Marc Songini

CompuServe Network Services and OpenConnect Systems, Inc. will be introducing a software/service package that allows easy access to SNA mainframe applications via the Internet.

Last week, the companies jointly announced they would bundle two existing software packages — CompuServe's NT-Link remote access tool and OpenConnect's OC://Web-Connect Pro SNA-Web integration software — to create OC://WebConnect Pro for CompuServe. The software will be offered with CompuServe Network Service's managed Internet offering.

The package will give remote users a secure, dependable Java-enabled link into their corporate SNA mainframes for application access and data retrieval, said representatives of both companies.

OC://WebConnect Pro for CompuServe lets a remote user running Windows 95 or NT dial in to a central NT server and download the OpenConnect Java applet. The applet sets up a graphical or text session with the SNA host and handles the translation between SNA and IP datastreams.

"What this does is remove the hassle a lot of administrators are required to go through to turn up remote access services," said Mike Tosco, product manager at CompuServe Network Services.

Another benefit of the service is it does not require any change to the SNA architecture.

Also, by allowing users to tap into OpenConnect's Java-based WebConnect SNA access technology, users will not have to deploy SNA emulation packages on all PCs requiring SNA access. This saves software costs and configuration headaches.

"This is a breath of new life for host connectivity," said Tim Sloane, senior director of Internet research at Boston-based consultancy Aberdeen Group, Inc.

The service offers speed and simplicity, Sloane said. "Any Java-capable desktop can come in and download the Java applet and automatically be in a session with the IBM host," he said. "It lowers your costs, and it almost eliminates the question of networking issues in opening and expanding access to host data. And it maintains your current security infrastructure."

CompuServe Network Services will market OC://WebConnect Pro in 50- and 100-user packages this fall. Neither company revealed pricing.

© CompuServe Network Services: (800) 433-0389

Gore

Continued from page 6

find Bizarre Video Productions, BodyCello, MacDaddy Entertainment, and more, all of which distribute pornography.

The Multimedia Source Book is "promoting the growth of a national and global information infrastructure."
Vice President Al Gore

In spite of the risqué content, an entire page at the front of the book features Gore's photo and a letter from him, saying, "I am proud to recognize your efforts."

Gore is quoted as saying, "the book will result in closer ties between companies that cover computers, audio/video, telemedia, interactive TV and online services."

What's the deal?

Reluctant to provide details on how he had gotten the vice president's endorsement, Hi-Tech Media President Howard Kwak said the letter was real, and he was doing nothing wrong by featuring Gore in his posters.

"We have all the documentation for that," Kwak angrily said.

However, last week the White House, which was struggling to track down the correspondence to Kwak, objected vehemently to Al Gore as poster boy.

"It may be a mistake on our part, and we're still trying to figure out what's going on, but you can't quote from any statement of the vice president for advertising purposes," said White House spokesman Roger Salazar. Other sources said it would be unusual for the vice president to endorse any book. Salazar said White House lawyers would be telling Hi-Tech Media to "cease and desist" using the vice president's likeness and endorsement for the multimedia guide.

Gore isn't the only listed endorser of the *Multimedia Source Book.* National Association of Broadcasters President Eddie Fritz is quoted as saying the book makes it "easy to keep track of the multimedia players."

And Bob Storch, former senior vice president at New York advertising firm Poppe Tyson, Inc., is quoted as hyping the book as "the best resource . . . a must for the industry."

"I honestly thought they did a wonderful job as directories go," Storch said,trying to recall exactly what he told Hi-Tech Media more than two years ago. "It was a Korean company, and I don't recall them listing pornography. I don't think they should be quoting me now." ■

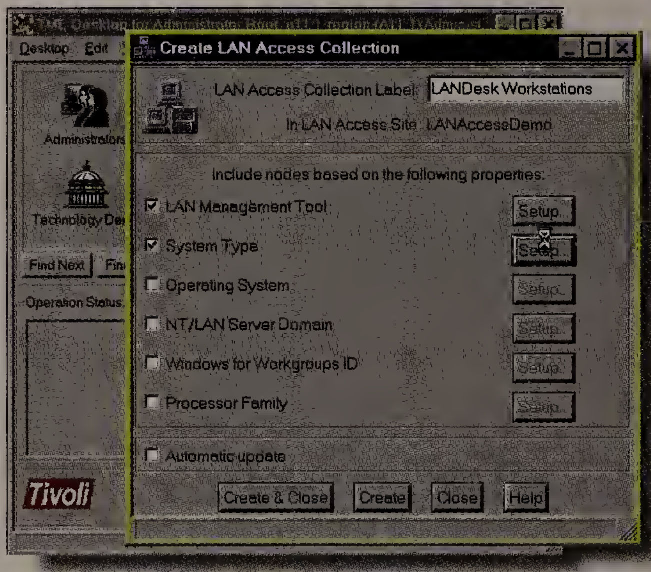
Tivoli, Intel pair on net management

Intel teams with help desk vendors; Tivoli, Intel, McAfee seek to make user lives easier.

By Jim Duffy

Three leading management vendors have struck deals with other companies in order to better integrate their offerings.

IBM subsidiary Tivoli Systems, Inc. last week allied with Intel Corp. to introduce TME 10 LAN Access, a product for managing disparate workgroups.



LAN Access Collection Label: LANDesk Workstations
In LAN Access Site: LANAccessDemo
Include nodes based on the following properties:
☑ LAN Management Tool
☑ System Type
☐ Operating System
☐ NT/LAN Server Domain
☐ Windows for Workgroups ID
☐ Processor Family
☐ Automatic update

Tivoli's LAN Access *manages LANs from TME 10.*

Separately, Intel said it is working with leading help desk product vendors to develop software that integrates Intel's desktop management tools with help desk consoles.

And McAfee Associates, Inc. last week partnered with Microsoft Corp. to unveil software that binds Microsoft's SQL Server database management system with a new release of McAfee HelpDesk.

Tivoli's TME 10 LAN Access enables users to launch Intel's LANDesk management suite, Microsoft's Systems Management Server (SMS) and IBM's NetFinity applications from a TME 10 console to manage desktops across a network.

"Customers have a choice of being able to do centralized or decentralized administration and management of multiple types of LANs," said Sue Aldrich, research analyst and senior consultant at Patricia Seybold Group, Inc. in Boston. "A lot of LAN administration tasks are not provided by enterprise management platforms."

"A lot of LAN administration tasks are not provided by enterprise management platforms," said Sue Aldrich of Patricia Seybold Group.

One of the benefits of LAN Access is it will reduce users' total cost of IT resource ownership, according to Tivoli.

LAN Access is designed to alleviate the need for users to develop their own software to integrate TME 10 and LANDesk.

But that may be a hard sell, given that Tivoli CEO Frank Moss said the topic of total cost of ownership has been "greatly exaggerated, overdiscussed and overhyped" by the industry. Moss made his remarks at Network World's Managing Enterprise Networks and Systems conference in Boston two weeks ago.

Regardless of its impact on total cost of ownership, LAN Access implements the Multi-Platform Management API, developed by Tivoli and Intel a year ago to establish integration between workgroup and enterprise management products.

TME 10 LAN Access costs $4,500 per server and $175 per managed node and is available now.

A call for help

Intel's help desk software, called Desktop Integrator Technology, will provide access to PC systems discovery, inventory data, and diagnostics and remote control capabilities from support technician consoles.

This will enable "first-line" support analysts to extract information from desktops instrumented with management software such as LANDesk, shipping versions of Novell, Inc.'s ManageWise and SMS.

Intel is working with help desk vendors Vantive Corp., Magic Solutions, Inc. and Utopia to develop products that implement Desktop Integrator Technology. The vendors will release products separately.

Separately, McAfee will make the EZ SQL Edition of McAfee Help Desk available later this month.

Users of this software will be able to install and configure SQL Server with the touch of a button, according to McAfee.

Department-level help desk systems, such as McAfee Help Desk, have frequently lacked an underlying SQL database because such database software has been too expensive and complex to install and maintain, the company said.

Users also can view hardware and software inventory data stored in an SMS database from the new edition of McAfee Help Desk.

The software costs $2,828 per help desk seat.

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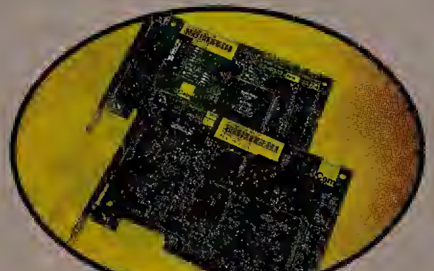

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FCC provides ammo to push down international telephone rates

Despite lack of authority over foreign carriers, agency attempts to force rate reduction.

By David Rohde
Washington, D.C.

Frustrated by continually high international calling rates, the Federal Communications Commission last week essentially ordered U.S. carriers to refuse to pay foreign carriers' exorbitant termination charges.

The move eventually could lead to large savings for users whose private networks do not extend overseas or those that must make frequent off-net international voice, fax or dial-up data connections. But it also could generate resistance and protests from foreign carriers that maintain the FCC cannot devise international telecommunications policy on its own.

DRIVING DOWN COSTS

Under the FCC's directive, the international settlement rate — the fee foreign carriers charge to complete U.S.-originated calls — is designed to drop dramatically over five years.

Current weighted average international settlement rate:
- **35 cents per minute**

New international settlement rate*:
- **15 cents per minute for industrialized nations****
- **19 cents per minute for emerging nations****
- **23 cents per minute for poorer nations****

* Phased in between Jan. 1, 1999 and Jan. 1, 2003.

**The International Telecommunication Union determines the definition of industrialized, emerging and poorer nations.

SOURCE: FCC, WASHINGTON, D.C.

In its order, the FCC voted to set new, lower benchmarks for so-called international settlement rates. Those rates are the per-minute fees paid by U.S. carriers to foreign carriers for terminating their calls.

Although they represent only one component of international charges, the settlement rates set a floor under international rates, much the same way that regional Bell operating companies' local access rates set a floor under domestic telecom rates.

But the impact is far greater overseas because settlement rates today average 35 cents, compared to the average 3 cents per minute access rate charged by RBOCs on either end of a domestic connection.

Under the FCC's order, by Jan. 1, 1999, the settlement rate must drop to no more than 15 cents per minute on calls to the 44 wealthiest countries besides the U.S. Settlement rates will be somewhat higher for countries with developing economies and will be phased in over five years (see graphic).

Settlement rates ordinarily are set in negotiations between a U.S. carrier and a foreign carrier — usually a government-owned monopoly.

FCC International Bureau Chief Peter Cowher acknowledged that foreign carriers are not subject to FCC regulations. He cited two ways to enforce the agency's will overseas.

First, if a foreign carrier in an industrialized nation refuses to bring the settlement rate down, the FCC could order U.S. carriers to pay only 15 cents a minute to that carrier starting in 1999, Cowher said. Second, the FCC could stop the offending foreign carrier from entering the U.S. domestic market — or buying all or part of a U.S. carrier — unless the foreign carrier reduces its settlement rate to 15 cents or less.

The FCC's action comes as users are increasingly devising ways to bypass the international telephone network entirely. Options include sending voice and certain kinds of store-and-forward traffic, especially fax, over global carriers' frame relay networks or via the Internet.

Big U.S. long-distance carriers sought the FCC action to reduce a growing competitive disadvantage with value-added networks such as Infonet and Equant. These networks now can offer voice and fax services over their packet data networks without fear of paying excessive settlement rates, said Leonard Elfenbein, president of Lynx Technologies, Inc., a Fairfield, N.J., consulting firm specializing in international network integration.

Many countries affected by the FCC action earlier this year signed a World Trade Organization (WTO) telecom pact. In doing so they committed themselves to end monopoly telecom regimes that maintain high prices for voice and data services. At the time, analysts said the WTO pact alone would do little to lower international rates quickly (*NW*, Feb. 24, page 1), and FCC officials reiterated that concern last week.

The speed of overseas rate cuts "bears resemblance to the speed of an escargot," joked FCC Commissioner Susan Ness. Many countries inflated charges to U.S. callers in order to subsidize their internal telecom network buildouts, added Commissioner Rachelle Chong. ■

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News Editor: *Doug Barney*
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Associate News Editor: *Michael Cooney*
Phone: (508) 875-6400
Enterprise Editor: *Charles Bruno*
Phone: (407) 381-7801; Fax: (407) 381-7903

NETWORK WORLD FUSION
Online Editor: *Adam Gaffin, Phone: (508) 820-7433*
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CARRIERS & ISPS
Senior Editor: *David Rohde*
Phone: (202) 879-6758; Fax: (202) 347-2365
Senior Writer: *Denise Pappalardo*
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INTRANET APPLICATIONS
Senior Editor: *John Cox, Phone: (508) 834-0554,*
Fax: (508) 834-0558; **Senior Editor:** *Ellen Messmer,*
Phone: (202) 879-6752, Fax: (202) 347-2365;
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Test Center Director: *Lee Schlesinger*
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Teletoons: *Phil Frank, Joe Troise*

INTRANET
Executive Editor: *Beth Schultz, Phone: (773) 283-0213, Fax: (773) 283-0214*
Senior Editor: *Peggy Watt, Phone: (415) 903-9519, Fax: (415) 968-3459*
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Third-party firms plug OpenView service gap

By Jim Duffy

While Hewlett-Packard Co. figures out how to serve up the service level management company it recently acquired, two vendors are set to service the needs of HP OpenView users.

Micromuse, Inc. next week will unveil Service Views for Network Node Manager (NNM), software that allows HP OpenView users to manage network devices as if they were a collection of services.

This may be welcome news for OpenView users impatient for HP to dole out the service management goods from Prolin, a Dutch service management company it acquired last spring (*NW*, April 28, page 19).

Service Views for NNM takes OpenView's view of distinct network components and combines them into a view of the application or business process they support.

For example, if distinct network elements, systems and applications play roles in delivering a specific network service, Service Views manages these devices as a single logical service delivery mechanism rather than as separate components.

Service Views alleviates the need to hire consultants for the expensive and time-consuming task of customizing OpenView to deliver service level views, claimed Tim Tokarsky, vice president of application development at Micromuse.

"If you wanted to create a single icon that represented 40 intranet or extranet servers, you could do that," said Scott Parker of Southernview Technologies.

Service Views for NNM runs on Micromuse's Netcool Object Server under HP-UX or Solaris. It requires no change to OpenView NNM and begins collecting NNM events out of the box.

Service Views allows users to prioritize and categorize NNM events according to the network service with which they relate.

This enables users to determine the root cause of the fault quicker because they do not have to examine every device involved in that service.

By itself, NNM provides a fragmented view of IT resources. It is difficult to tell if a single flashing icon equals one problem or 100, Tokarsky said.

"You've got this logical view where you can create anything you want to," said Netcool and OpenView user Scott Parker, chief technical officer at Southernview Technologies, Inc., in Atlanta. "If you wanted to create a single icon that represented 40 intranet or extranet servers, you could do that."

Parker's only reservation about Service Views for NNM is that it may be too pricey. It runs with Netcool, which costs about $60,000, he said.

But Micromuse has not yet determined pricing for Service Views for NNM. Regardless, the product will be available this fall.

Down at Del Mar

Meanwhile, Del Mar Solutions, Inc.'s ServiceWatch for OpenView software is available now. ServiceWatch for OpenView monitors the response time, performance, availability and health of network services in real time.

ServiceWatch can monitor network services such as Domain Name System, File Transfer Protocol and Web servers. When a network service fails or responds too slowly, ServiceWatch notifies network managers via pager or e-mail, SNMP trap or error log.

ServiceWatch pricing starts at $495.

© Micromuse: (212) 758-1222; Del Mar Solutions: (415) 328-5116

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ALCATEL

Levine

Continued from page 1

message urging employees to take their money out of the bank.

Legend has it he commissioned a custom likeness of the head of his arch rival, 3Com Corp. Chairman and CEO Eric Benhamou, that now graces Levine's playroom . . . resting in the jaws of a stuffed alligator.

The stories go on and on.

Eccentricities aside, look at what he has achieved: Levine took Cabletron from its humble birth in his Ashland, Mass., garage in 1983 to the $1.5 billion company it is today.

Don Reed, *left, gets the nod from Cabletron cofounders Bob Levine and Craig Benson.*

SHAWN HENRY

His own success, it would seem, finally caught up with him. His brash style and hyperaggressive tactics were critical in putting Cabletron on the map, but do not play as well in a company this big.

So Levine is retiring at age 39. His only official connection will be his 10.2 million shares of Cabletron stock worth $354.5 million at press time. He leaves the company as it is poised to head in a new direction, selling products to phone companies that want to offer integrated voice, data and video services.

To fill Levine's shoes, Cabletron tapped Don Reed, the NYNEX Corp. president and group executive who brings three key attributes: experience running a multibillion-dollar business, personal contacts in telco boardrooms, and the maturity to guide the company from adolescence to adulthood.

Whereas Levine was the impetuous, bodybuilding young prince, Reed is an elder statesman. Reed is known as a seasoned politician who brokered international telecom agreements; Levine is noted for bluntness, and he set the tone for all of Cabletron.

For example, Levine once bused a group of engineers from a newly acquired company to Cabletron's Rochester headquarters for a meeting — then notified those who were left behind that they were fired. It had the wrong effect on the chosen few on the bus — most of them quit.

One former Cabletron employee characterized the atmosphere as intense and confrontational. Firings were sudden, without warning and sometimes without apparent reason. Rashes of firings would spread through departments — purges, the employee called them.

Levine expected his employees' intensity to match his own. He was known to rev up sales staff by brandishing a hunting knife and urging them to kill the competition. "Sales is war" was the message.

The net result was a corporate culture so oppressive that workers gave credence to rumors that phone logs were checked to see if they were talking to competitors. If they were, it could mean their jobs. "It wasn't a fun place to work," a former employee said.

Some of Levine's internal style at times spilled over into the public arena. Notably, last year he so antagonized rival Cisco Systems, Inc. with a derisive advertising campaign that Cisco cut Cabletron off from using Cisco's Internetwork Operating System (IOS) routing software.

Cabletron's colorful Bob Levine *introduces his replacement, NYNEX's more staid Don Reed.*

SHAWN HENRY

Despite Levine's cowboy image, his replacement, Reed, likes a lot of what Levine has done. "When people focus on the behavior of Bob Levine, I look right through that. None of that bothers me. He is an aggressive motivator. It's always the tank they focus on. What I saw and have always been impressed with is a very customer-focused, nonbureaucratic company that spends its money on good products and services," Reed said.

Reed liked Levine's style so much that four years ago he brought his NYNEX management team to Cabletron to help snap NYNEX out of its monopoly-induced torpor to become more competitive. Reed said the visit helped.

Wall Street, though, thought it was time for Cabletron to grow up. A year and a half ago, the Big Four in networking — Cabletron, Cisco, 3Com Corp. and Bay Networks, Inc. — were competing neck and neck. "Now we have Cisco and 3Com from a size standpoint stepping away from the rest of the group. Cabletron was ready for a management change that will bring them to the level where they can compete more successfully," said Matt Barzowskas, vice president of First Albany Corp. in Boston. The telco and channel-distribution markets are more sophisticated. Cabletron needs to be more sophisticated, he said.

Levine apparently recognized that after the Cisco IOS debacle and tried to shore up Cabletron's image. "Bob made an extensive run trying to get customers and noncustomers to believe that they're not just these crazy people anymore; they actually have a strong company and a good story to tell," Barzowskas said.

But it did not work. Levine ran out of time. He heads out to pasture in December with lots of time left to play with his tank. ■

Famous last words from Bob Levine

Cabletron's outgoing CEO says the time is right to hand over the reins.

Q&A No matter how you slice it, Cabletron Systems, Inc. will not be the same without its colorful outgoing CEO and President Bob Levine. Levine, who founded Cabletron with company Chairman Craig Benson in 1983, spoke with *Network World* Senior Writer Tim Greene last week.

You've thrown yourself into Cabletron for 14 years. What are you going through now?

I feel a great deal of emotion that I'm leaving something that I helped build. I also feel a little fortunate that I'm in a position to move on and do some of the things in life that normally people aren't able to do until they're 60 years old. I like to ski. I love boating. I gave up golf 15 years ago because I couldn't do that. Most importantly I'll be spending time with my family. That's the No. 1.

How big is your family?

It's not big, but my parents are getting older and I don't want to look back and say, "God, I wish I could have gone out to dinner with them more often."

What were you looking for in a successor?

We wanted to find somebody who had contacts in what we think is one of the biggest future growth markets — the telco industry, both nationally and internationally.

How can you enter the telco market without forfeiting some of the personal attention Cabletron gives to corporate customers?

Our other customers are looking for ways to reduce the cost of operating their telco and data environments. We're doing this for our corporate customers. The bulk of our corporate customers want and need this convergence. This allows us to reduce the cost of operating by bringing these two worlds [voice and data] together.

Bob Levine did not *know if he could run a multibillion dollar company.*

DAVE BRADLEY

Do you have doubts about whether you could have run a multibillion-dollar company?

I didn't know. But I wasn't looking at it that way. I wanted to retire, and I knew that I wanted someone who had definitely [run a multibillion-dollar company] before and who had contacts beyond what I had. My time was coming up. I wanted, along with Craig, to make the best choice and transition possible.

A lot of people know little about Cabletron except for stories about you that are controversial. Was that a problem in terms of Cabletron getting to the next level?

No, I don't believe so. The 6,600 people that we currently employ are very committed to the same philosophies that Craig and I share, so if this were a problem we probably wouldn't be able to happily employ 6,600 people around the world. A lot of things are misunderstood from the outside, but are clearly understood in the context that they're done on the inside. So no, that didn't have any effect.

What is the something extra that your replacement, Don Reed, brings to Cabletron?

Don has led an organization of 26,000 people. To date, I have led an organization of 6,600 people. I have never made the higher level business contacts because I've been more focused on the day-to-day running of Cabletron. I've done data, but I've never done voice. Don has built a network internally for NYNEX that includes voice and data. He has done joint ventures in Asia and Europe with the telcos. I've never even been to Asia.

What's driven you all these years?

Whatever I do I like to do 110%, everything in excess, nothing in moderation. It's a personality trait. I'm very competitive.

So who will you compete with now? It doesn't seem like golf could compare to running a billion-dollar company.

No, but I would like to lead a more balanced lifestyle for a period of time. ■

Read the complete transcript of our interview with Cabletron's departing CEO Robert Levine and Chairman Craig Benson.

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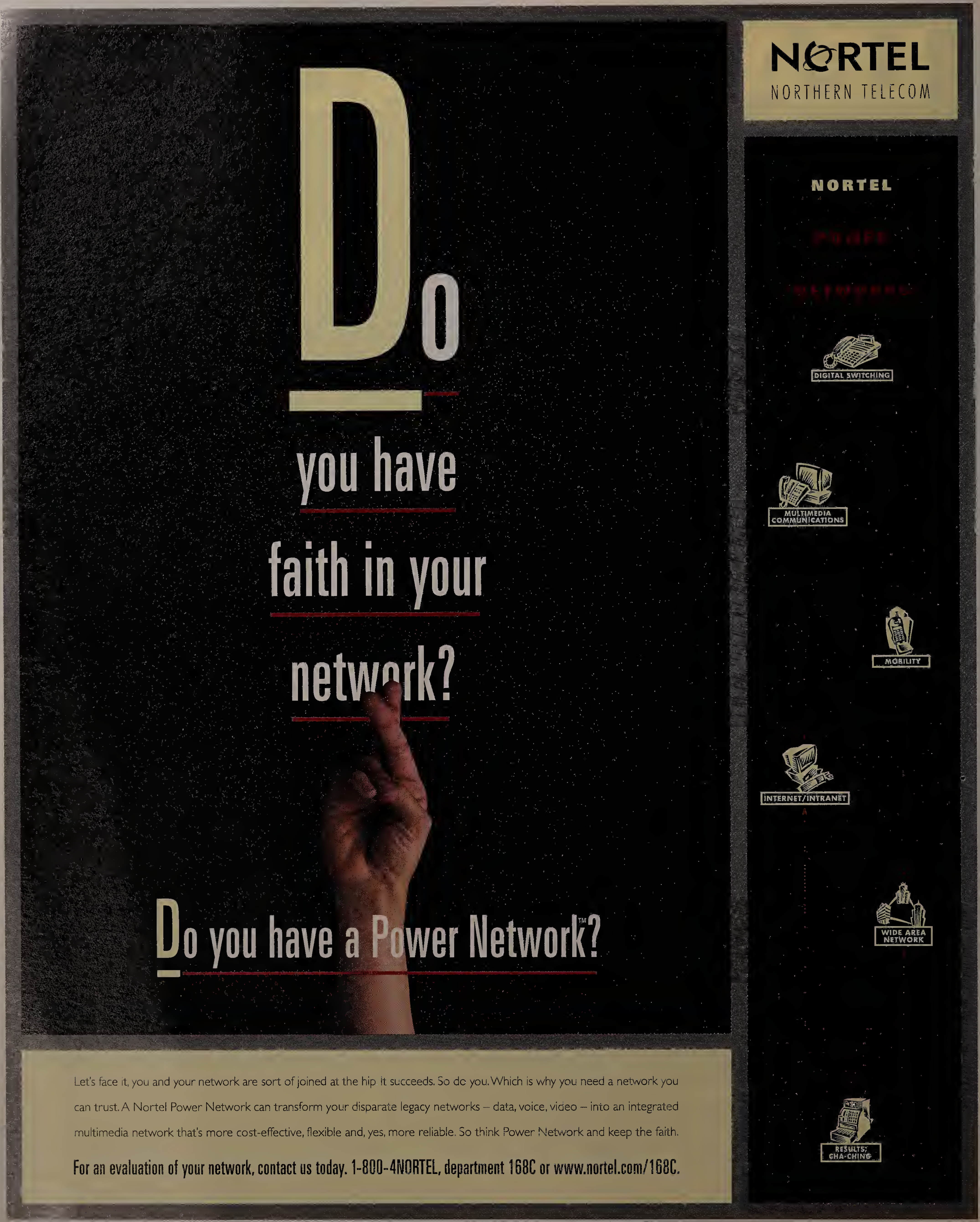
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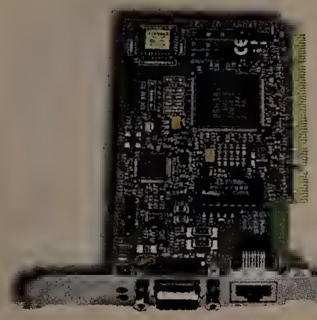
Local Networks

Covering: LAN Hubs, Switches, and Management • Operating Systems • Servers

Briefs

■ **Compaq Computer Corp.** *last week pumped up its Netelligent product line with two* **token-ring network interface cards.** *The PCI and ISA adapters operate at 4M or 16M bit/sec and are designed for use in x86-based computers and servers. Each card can support Dedicated Token Ring, which provides full-duplex operation of speeds up to 32M bit/sec. The PCI card is priced at $313, and the ISA adapter costs $277. Both will be available this month.*

© Compaq: (800) 345-1518



Compaq's *new token-ring card*

■ **XLNT Designs, Inc.** *last week announced its* **Millennium 4000 switch,** *as expected. The five-slot chassis, which has a 6.4G bit/sec backplane, supports* **switched Ethernet, Fast Ethernet, Gigabit Ethernet and FDDI** *links. The product will ship later this summer.*

© XLNT: (619) 487-9320

■ **IBM** *is releasing hardware and software enhancements to its* **8274 Nways LAN RouteSwitch** *designed to let customers build larger and faster switched networks. IBM is offering a family of switch modules with up to 32 ports that support Ethernet, Fast Ethernet, ATM, Token Ring or FDDI. The company also issued Version 3.0 of its Nways RouteSwitch Software Program, which is designed to work with the new modules to improve the switch's core operations. The modules start at $5,450; the software starts at $950. Both are shipping now.*

© IBM (800) 426-2255

NBase adds variety to Ethernet switch line

Company rolls out eight new workgroup and desktop switches that boast from two to 48 ports.

By Jodi Cohen
Chatsworth, Calif.

NBase Communications last week bolstered its Ethernet product line with eight workgroup and desktop switches.

The new MegaSwitch devices — which range from two to 48 ports — give NBase one of the most complete LAN switching product portfolios in the industry, analysts said. NBase is mainly known for its autonegotiating Ethernet/Fast Ethernet switch, which was one of the first of its kind on the market.

The biggest of the new switches is the 48-port NH2048, a 10M/100M bit/sec Ethernet device that also supports two Gigabit Ethernet, Fast Ethernet or ATM uplinks. The switch has a backplane capacity of 1G bit/sec and boasts a filtering and forwarding rate of 650,000 packet/sec.

A unique feature is the device's group — or port — switching capability, industry observers said. Port switching allows customers to group certain ports on the same LAN segment to balance throughput on the switch. Every four ports on the NH2048 constitute a segment, according to Tim Smith, senior network consultant at NBase.

"This combines hub and switch technology so that you get the best of both worlds," he said.

Customers can use the group switch to create a Fast Ethernet backbone or link 10M/100M bit/sec Ethernet networks with ATM backbone or WAN connections.

Other products include the following:

- A 32-port Fast Ethernet workgroup switch
- A 24-port Ethernet workgroup switch with as many as 10 Fast Ethernet ports
- A 32-port Ethernet desktop switch with two Fast Ethernet uplinks
- An eight-port autonegotiating 10M/100M bit/sec Ethernet switch
- A 16-port autonegotiating 10M/100M bit/sec Ethernet switch
- A 12-port Ethernet switch with three Fast Ethernet ports
- A two-port switch for converting 10M bit/sec Ethernet to 100M bit/sec, copper to fiber, or half duplex to full duplex

All switches support flow control and port mirroring, and many offer virtual LAN and Layer 3 switching support.

Customers can manage the switches using NBase's MegaVision SNMP-based software, which runs on top of Hewlett-Packard Co.'s OpenView Windows and Unix platforms as well as Cabletron Systems, Inc.'s Spectrum offering.

LAN switch players Digital Equipment Corp., Intel Corp. and Newbridge Networks, Inc. may sign OEM agreements with NBase for its new switch gear, according to Mannix O'Connor, national sales manager at NBase. All three vendors already are OEMs for NBase's existing switches.

One analyst said NBase is starting to have a serious presence in the industry.

"NBase has a very healthy business, especially considering all of their OEM relationships," said Esmerelda Silva, an analyst at International Data Corp., a market research firm in Framingham, Mass. "They've got some real solid technology."

Pricing and availability for the NH2048 group switch has not been set. The other switches range in price from $825 to $3,920 and are available now.

© NBase: (818) 773-0900

NH2048 SWITCH HIGHLIGHTS

- Features 48 Ethernet/Fast Ethernet ports
- Supports two Gigabit Ethernet or ATM uplinks
- Lets customers group certain ports on the same LAN segment
- Has a filtering and forwarding rate of 650,000 packet/sec
- Supports SNMP and RMON

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- An overview of switched Ethernet
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- A review of port switch hubs

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NT Alternatives

NCR embraces Solaris for its Intel-based servers

Agreement with NCR could strengthen Sun's Windows NT integration story.

By Christine Burns
Dayton, Ohio

NCR Corp. and Sun Microsystems, Inc. last week announced an agreement under which Sun's Solaris operating system will come bundled with NCR's WorldMark servers, which are powered by Intel Corp. processors.

The long-term thrust of the agreement is to provide Sun's Unix-based operating system as an option for customers looking to make the move to servers based on Intel's 64-bit Merced chip when it hits the streets in mid-1999.

Sun Chairman Scott McNealy predicted this move, in conjunction with future partnerships with other vendors whose servers run on Intel processors, will position Solaris as the 64-bit Unix software of choice. He also said the agreement will help Solaris compete against Windows NT Server, the only other operating system McNealy expects to be successful in evolving to support Merced.

Sun also is aiming to bolster its NT integration story by aligning itself with NCR, an enterprise server vendor with a strong presence in the NT market, one analyst said.

"While Sun bashes NT left and right, [the company] wants users to run Solaris as a back-end service to NT clients," said Robert Dorin, a senior analyst with Aberdeen Group, Inc., a Boston consultancy. "This [agreement] could help users believe that Solaris can be useful in a mixed environment."

By year-end, NCR will offer Solaris alongside its own flavor of Unix, MP-RAS, on its one- to eight-processor WorldMark 4800 servers. While NCR plans to enhance and support its 32-bit MP-RAS, the only 64-bit Unix operating system it will offer will be Solaris, said Bill Eisenman, senior vice president of NCR's Computer Systems Group.

NCR and Sun will integrate MP-RAS' enterprise scalability features, such as dynamic configuration on start-up and the ability to hot-swap server components, into future versions of Solaris. Also, NCR will migrate its Teradata database management system to Solaris.

© NCR: (513) 297-5700; Sun: (800) 786-7638

Sun's McNealy *claims Solaris and NT will be the sole survivors as 64-bit operating systems for Intel-based servers.*

WIRED WINDOWS

A better way to batch

While the trade press does a good job focusing on cutting-edge network and computer technology, I realize that many of you also have a keen interest in what to do about your current applications.

Because of budget constraints, legacy applications, lack of time or simple inertia, a significant number of organizations are just now planning a move from DOS character-based programs to graphical user interface-based Windows or Windows NT programs.

Many DOS programs have remained in place because of the extensive use of batch files. These files are enhanced with small DOS utilities to automate tasks for end users unable or unwilling to learn a series of commands to accomplish their tasks. While many of the batch files will work unchanged in a 32-bit Windows environment for DOS programs, the files won't support your Windows-based applications.

Microsoft would prefer that you use Visual Basic and application macros to add this automation, but that isn't the only way.

Morrie Wilson of Wilson WindowWare has a better way. He has been writing and selling Windows utilities since 1989 (Wilson proudly claims to have sold to *both* Windows 1.0 users) and discovered long ago that people missed their batch files.

Dave Kearns

Out of this realization came WinBatch, Wilson WindowWare's best seller, just released in a new version as WinBatch 97. WinBatch can do just about everything your DOS batch file can, but adds hundreds of Windows-only tasks.

WinBatch uses the Windows Interface Language (WIL), which has more than 400 functions available to handle file management, disk drive management, directory management and more. Because WIL is a very high-level language, it can accomplish many tasks with one command—just like a batch file.

And WIL works with commands that are more conversational than BASIC or batch files. For example, if you want the user to input a file name, the command is AskFileName. This pops up a File Open dialog box. The user chooses a file, clicks OK and the WIL command file continues. What could be easier?

It doesn't require a manual to figure out what many of the commands, such as AskPassword and AskYesNo, will do. WIL also can be used to manipulate text strings, perform arithmetic and trigonometric procedures and more.

By enabling you to automate tasks in the Windows environment for your company's end users, WinBatch could make you a hero.

Get all the details at www.windowware.com. And while you're there, check out a new product called WebBatch. It will do for your intranet what WinBatch does for your Windows desktops.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

Tip of the week

Are network security concerns keeping you up at night? I recommend taking a look at a new book from Sams.net called Maximum Security: A Hacker's Guide to Protecting your Internet Site and Network. *It gives as complete a treatment of all possible security risks and how to overcome them as I've seen in one place. ISBN: 1-57521-268-4.*

NEC unveils new Pentium II server

By Marc Songini
Mountain View, Calif.

NEC Computer Systems last week joined the growing group of vendors releasing Pentium II microprocessor-based servers.

Weeks after competitors Dell Computer Corp. and Compaq Computer Corp. released their Pentium II servers, NEC announced the LE2200, a server set to ship later this month.

NEC claims the LE2200 stands out due in part to its expansion capacity. The unit contains eight drive bays, four of which are for hard drives. The next closest in its class has only three, NEC officials said.

The LE2200, which supports from 20 to 200 clients, comes with one Intel processor, but can be upgraded to dual processors. The machine is available in 233-MHz and 266-MHz speeds and can run Windows NT and NetWare.

The LE2200 includes six slots: two that handle PCI cards, three for ISA and one interchangeable slot.

The PCI Ultra-Wide SCSI controller supports up to four 9G-byte hard drives. RAID functionality is another option, something unique for this level of server, NEC claimed.

The unit ships with SNMP-based NEC ESM Pro 3.0 server management software.

Priced right

LE2200's price will make it an attractive buy, said one analyst.

"This combination of features makes the LE2200 something cost-conscious buyers have to look at," said Robert Dorin, senior analyst at Aberdeen Group, Inc., a consultancy based in Boston.

The product will ship at the end of this month. The 233-MHz LE2200 with 32M bytes of error checking and correcting (ECC) memory and 2G bytes of hard drive capacity costs $2,999. The 266-MHz model with 64M bytes of ECC memory and a 9G-byte hard drive costs $4,559.

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Briefs

■ **Cisco Systems, Inc.** *last week announced general availability of* **56K bit/sec modem technology** *for the Cisco AS5200 access server. All Cisco AS5200 purchases made between Feb. 1 and now can upgrade to the 56K bit/sec technology for free; purchases made prior to Feb. 1 qualify for a discount. Cisco has standardized its 56K bit/sec technology on the K56Flex modem protocol jointly developed by Rockwell International Corp. and Lucent Technologies, Inc.*

Separately, Cisco announced an agreement with StarQuest Software, Inc., of Berkeley, Calif., to develop products that enable TCP/IP-based desktop clients to access remote IBM DB2 databases. Cisco and StarQuest will incorporate the functionality of StarQuest's software, StarPipes, into Cisco IOS software.

■ *The already-varied world of* **asymmetric digital subscriber line (ADSL)** *technology has a new feature:* **two, instead of one, voice lines** *over the same pair of copper wires that carries a broadband digital signal.*

Orckit Communications, Ltd. will test the technology next month with two vendors of digital-added main-line technology, which turns a one-line analog phone line into a two-line digital connection. ADSL normally carries data up to 8M bit/sec in one direction and 1M bit/sec in the other. The testing will be done with Raychem Corp. and Charles Industries, Ltd.

■ **Bay Networks, Inc.** *has signed a* **joint marketing agreement with Visual Networks,** *a provider of WAN monitoring devices. Under the terms of the agreement, the companies will market end-to-end LAN and WAN monitoring systems that combine Bay's Optivity management software with Visual's Visual Uptime product.*

Tivoli chief says lightweight client framework is an extensible Java agent

By Jim Duffy
Austin, Texas

Tivoli Systems, Inc.'s ''lightweight'' management framework, on tap for later this year, is more an extensible agent than a slimmed-down version of the Tivoli Management Environment (TME).

Tivoli CEO Frank Moss two weeks ago disclosed plans to release a ''lightweight'' version of TME 10 by the end of the year to make the management framework and its applications easier to install and scale (*NW*, Aug. 4, page 1). Moss emphasized that this framework, which will run on managed systems as opposed to management servers, is more than an agent.

''What we've done is create a lightweight, autonomous, extensible agent,'' said Martin Neath, vice president of product development at Tivoli.

''It is part of the overall package we call the Tivoli framework'' that runs on clients, management servers and the graphical user interface.

The extensible agent is a component of a ''major new release'' of the overall Tivoli framework that the company has been working on over the past year, Neath said. This new release will be the fourth architectural update to the framework, he said.

The agent, which runs on client endpoints, takes up 280K bytes of disk and 1M byte of virtual memory on a Windows 95 client, Neath said. It is connectionless, meaning it is designed to work in environments with unpredictable networks or those with a large number of laptop computers that are only periodically connected to the network, he said.

The agent also is stateless, Neath said, meaning it does not need to be stored in persistent memory on the endpoints, only in cache memory. The agent's state can be stored and recreated from the TME management server.

''For truly large environments, one of the things that we believe is critical for the management system itself to be manageable is that things like backups, etc., don't have to go touch tens of thousands of machines that are being managed,'' Neath said.

Tivoli's *Neath*

The agent is extensible in that new application functionality can be downloaded and run on the client framework, much like a Java plug-in can be downloaded on a browser, Neath said. The framework is based on Java and the Common Object Request Broker Architecture, he said (*NW*, July 14, page 6).

Tivoli will beta-test the extensible agent this summer at a company with 85,000 client workstations.

The agent will be distributed to each workstation via an e-mail message attachment, a Web browser or logon scripts.

Once received, the agent will automatically detach itself from the mail message, install and configure itself. It will then report back to the management server any configuration changes that occurred while it was disconnected and determine if there are any new applications it needs to download.

''Because the agent is autonomous and intelligent, and because it can deal with network connections that come and go, it removes the need for centralized push or discovery technology,'' Neath said.

Tivoli has not yet determined pricing for its extensible agent.

© Tivoli: (512) 436-8000

VPNet revs up speed of its encryption gear

By Tim Greene
San Jose, Calif.

VPNet Technologies, Inc. last week announced a new hardware device it claims will make creating virtual private networks (VPN) across the Internet easier and faster.

VPNet's new encryption device, VSU 1010 VPN Service Unit, encrypts and compresses IP traffic at 10M bit/sec. Its previous VPN service unit operated at only 4M bit/sec, creating potential bottlenecks in Ethernet networks.

The VSU 1010 also performs authentication and manages encryption keys.

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Get online for:
- Overviews of VPN devices from other vendors
- A look at Microsoft's plan for a software-based VPN
- A firewall primer

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The unit sits on the LAN side of a router and is connected to the LAN through two 10M bit/sec Ethernet ports. Its onboard VPN directory identifies traffic as part of a VPN by source/destination headers.

Once the traffic is identified, the device compresses and encrypts the data for transport across the WAN. It also boosts security by adding packet-by-packet digital signature authentication.

The traffic is then transmitted across the wide area to a second VSU 1010 in front of the destination device, which decrypts and uncompresses the packets and passes them along to the destination device.

Depending on where the net manager places the VSU 1010, it can protect an entire site, a TCP/IP subnet or an individual device.

The state of Kansas is using VSU 1010s to guard a server that contains sensitive tax information remote users must access, said Dave Timpany, state network planning manager.

In researching other options to encrypt traffic, Timpany found that enabling encryption in an existing firewall and expanding the firewall to include other sites would cost $21,000 per year. Using an encryption option on the server would have cost $250,000, whereas VSU 1010s and their management software cost about $20,000, he said.

The VSU 1010 supports Remote Authentication Dial-In User Service servers, which can increase the number of authorized VPN users to thousands.

NEW VPNET ENCRYPTION BOX

VSU 1010 VPN Service Unit from VPNet Technologies features:

- 10M bit/sec Triple-DES encryption
- Supports one device, a subnet or an entire site
- Compresses data
- Supports thousands of users

The previous VSU Model 1000 supported only 400 users.

In addition to the VSU 1010, VPNet wheeled out a new version of its management software, VPNmanager, which adds tools for importing large batches of remote user data, making it easier to authorize remote users. VPNmanager works in conjunction with any Java-enabled browser.

VPNet also last week introduced a new version of its client software, VPNremote, for Microsoft Corp.'s Windows 95, which adds compression to its previous client. A Windows NT version is scheduled for the fall.

VSU 1010 costs $4,995. VPNmanager costs $3,995 and VPNremote costs $99. All are shipping now.

© VPNet: (408) 445-6000

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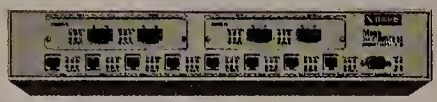

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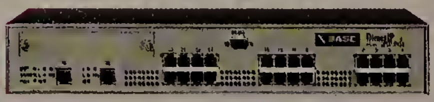

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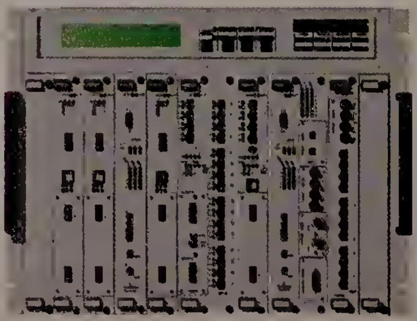

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Briefs

As expected, **MCI Communications Corp.** *reported a* **6.7% drop in second-quarter profits** *compared with a year ago, largely due to investments in the local exchange market that have failed to pay off.*

More alarming to financial analysts was that minutes of traffic carried on MCI's network grew only 5.5%, compared with 9.7% for the supposedly sickly AT&T and 15% for Sprint Corp.

Smaller providers are enjoying salad days: Intermedia Communications, Inc., a Florida-based competitive access provider that also is swamping the East Coast with frame relay switches for long-haul service, nearly tripled its revenues to $50.1 million for the quarter.

Congress turned aside a plea from outgoing **Federal Communications Commission** *Chairman Reed Hundt to block bankruptcy filings by winners of* **wireless personal communications services (PCS) licenses.**

A committee of bankruptcy lawyers told key members of Congress that the FCC should have investigated the creditworthiness of PCS license winners before issuing the licenses.

Many smaller PCS license holders are in arrears to the FCC due to a glutted wireless market, among other causes.

Executive departures are often par for the course when one company is acquired by another. **Digex, Inc.** *is no exception.* **Doug Humphrey,** *founder and chief technical officer at Digex,* **resigned** *earlier this month.*

Humphrey's resignation came just two weeks after Intermedia Communications, Inc.'s acquisition of the Beltsville, Md.-based Internet service provider became final.

It was stated that Humphrey left to pursue other interests.

Video broadcasts over the Internet

MCI teams with Progressive Networks to offer video and audio streaming services.

By Denise Pappalardo

MCI Communications Corp. and Progressive Networks, Inc. want to help you add some "real" life to your Web site.

Last week, MCI and Progressive announced RealNetwork, a new service that will let users support live or on-demand video broadcasts over the Internet.

MCI has deployed servers throughout its Internet backbone that support Progressive's RealAudio and RealVideo streaming technology. The servers let RealNetwork users broadcast live special events, such as music concerts, or content that can be downloaded on demand, such as your CEO's last speech.

Broadcasting over the 'Net

MCI and Progressive Networks are teaming to offer RealNetwork, a service that will let users host on-demand or live video events on their Web sites. Users are charged based on the type of programming they choose, such as 24x7, partial daily or per event.

Here is a possible pricing scenario:

If you have **250,000** daily visitors to a Web site, and **10%** of them access your video broadcast downloading **25,000** videostreams, your monthly charges would be **$8,500.***

*Based on total amount of streams downloaded during peak and off-peak hours. Users also are charged setup fees that average $1,000. General pricing is not available but offered on an individual basis.

MCI joins several other Internet service providers that offer Progressive's RealAudio and RealVideo hosting services. For example, Digex Communications, Inc. in Beltsville, Md., which recently was purchased by Intermedia Communications, Inc., was the most recent ISP to announce video streaming services based on Progressive's technology (*NW,* July 28, page 6). Live Event Stadium, Digex's service, is available to users on a per-event basis, which might be more affordable for some users.

RealNetwork users also will have the option of using the service on a per-event basis in addition to daily and 24x7 programming, said Debbie Pierson, MCI senior manager of Web services and Internet marketing.

MCI's pricing is not firmly set, but is instead determined case by case, Pierson said (see graphic). But the service will not be cheap. It will cost several thousand dollars per month for an active Web site. Some users may not be able to cost-justify this type of added expense.

But if you compare the service charges to print or TV advertisements, it actually makes sense, said Jeff Kagan, president of Kagan Telecom Associates, a consultancy in Atlanta. Kagan said RealNetwork services could especially be useful for electronic commerce, similar to an infomercial on the 'Net. For example, a user could put a 5- to 30-minute video clip on his Web site demonstrating a new product, Kagan said.

This is only the tip of the iceberg, Kagan added. Video over the Internet can have a large impact on businesses in the future, he said.

Slam dunk

Some of the service's initial customers include ESPN SportsZone, which will be using the service for next season's NBA games, as well as ABCNews.com, Atlantic Records and Home & Garden Television.

ESPN used Progressive's technology to broadcast several NBA games over its Internet Web site ESPN SportsZone last year. But the deployment of splitters throughout MCI's network is expected to stretch the reach and quality of the sports entertainment company, said Jack Ramsey, an ESPN commentator and former NBA coach.

MCI has deployed splitters at high-traffic hubs on its Internet backbone that act like mirrored or cached Web servers. When a Web surfer tries to download a video off a RealNetwork customer's Web site, the splitter directs that user to the closest server. This reduces the number of hops on the network to keep delays to a minimum.

Taking care of business

While most of RealNetwork's initial customers are from the broadcasting industry, Stephen Von Rump, vice president of MCI's enterprise marketing, said the service also has a place in the corporate world.

Business applications range from a national mortgage company sending videos to potential home buyers via the Internet to a company storing its latest press conference on the corporate intranet, Von Rump said.

The service is available now.
©MCI: (800) 955-6505

Concert venture stays on track

By Denise Pappalardo
Reston, Va.

While its parents have been going through some premarital counseling sessions, Concert is confidently looking forward to British Telecommunications, plc and MCI Communications Corp.'s union.

Last year, BT and MCI announced their plans to merge and become a $43 billion company, to be called Concert plc. Since the release last month of MCI's earnings report, BT has been going over MCI's checkbook with a fine-tooth comb to make sure the value is still there (*NW,* Aug. 4, page 33).

Concert's *Manning*

Despite some market naysaying, the merger is imminent, said Peter Manning, president and CEO at Concert Communications Services, a BT/MCI joint venture, based here, that focuses on international telecommunications services.

While MCI is still in meetings with BT officials trying to convince them that MCI remains a good investment after its recent low-revenue report, Concert is plugging along.

Does the slow motion on the merger front affect the speed of the company's business plans or services? "Hell will freeze over before we slow down," Manning said.

"From our perspective, the BT/MCI deal has always been excellent news," Manning said. While Concert's CEO said he was not brought in on any of the ongoing discussions between MCI and BT's chairmen, he has no doubt that the merger will go through.

"Nothing has changed for us. Our target goals are still the same, and it's pretty much business as usual," Manning said.

But things will change for Concert when BT and MCI finally do merge, as most industry watchers expect. The company will no longer be a joint venture, but instead a division or subsidiary of BT.

This means several things from a regulatory standpoint. "Historically, there have been regulatory restraints about sharing customer information between our two parent companies," Manning explained. In the past, BT and MCI could send out bids for the same customer, which could clearly be troublesome. When the merger is final, that issue is eliminated entirely, he said.

The merger also will mean better interconnection between networks. Manning cited regulatory restraints on how closely the two companies are able to interconnect their networks.

Improvements from an internal business perspective also are expected. Right now, Concert sells its services to third-party carriers around the world through BT and MCI. Once the merger is final, Concert will have the ability to sell directly to those third-party carriers, eliminating the middleman, Manning said. This is expected to increase customer support, he said. ■

AN MONITOR

The death of Internet fax services?

They say: "Where there's smoke, there's fire." So something must be burning in some of the carrier executive suites for them to have bought into the Internet fax services model.

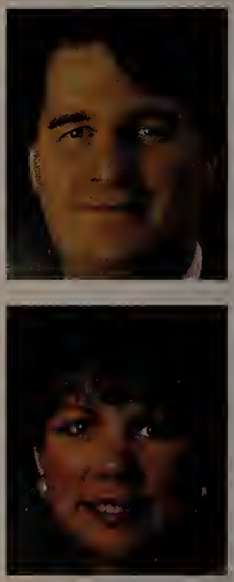
In the past decade, fax services have sprung up that offer long-distance cost savings by transmitting faxes over proprietary networks. In the past year, with great fanfare, the fax service idea has spread to the Internet, where cost savings are even more significant.

The fax service model inserts a middleman between fax machines and charges a per-page or per-minute fee for each fax transmitted. The fee is less than the public switched telephone network (PSTN) alternative, but is nonetheless significant — about 15 cents per page for domestic faxes, rising to 50 cents or more per page for international faxes.

Sure, there will be some initial market penetration among those who fax a lot, but the real bang for your Internet faxing buck is coming toward the end of this year, we think, in the form of Internet "faxmail" devices. Forget the pay-as-you-go service option; get a pay-once-and-be-done-with-it black-box option that will sit behind the fax machine and give it IP addressability. This type of device simply attaches to the fax machine and allows it to transmit over the Internet or any IP-based WAN.

These new devices currently are being developed. The faxmail machines send the faxes as Multi-purpose Internet Mail Extensions attachments with e-mail messages readable by any TIFF-compliant software or as real-time transmissions across the Internet using a RealAudio application.

Because there is no additional charge to send faxes as e-mail and the middleman is removed from the picture, the cost savings are phenomenal. It's doubtful Internet service providers will start charging for each e-mail. Web usage, yes. E-mail, no.



Daniel Briere and Christine Heckart

Leading fax manufacturers are going to put faxmail directly into new fax machines, so when you trade in your old fax for a new model, look for this.

TeleChoice predicts that within two years the faxmail alternative — with real-time fax product capabilities added — will be the preferred method of faxing over the Internet. The key to this change in the marketplace will be to make the faxmail machines affordable enough to be ubiquitously deployed. Models generally will cost less than $1,000 initially, but quickly will drop to the $300-to-$500 range. It doesn't take long to justify such functionality when most corporations have approximately one-third of their voice traffic tied up in fax transmissions. The payback can be measured in days.

While ISP fax service options sound good today, we expect their life cycle to be pretty short. We feel sorry for fax service and fax server vendors. We also feel sorry for the ISPs that counted on faxing services to help them climb out of the competitive morass of Internet connectivity by using this as a "pay-by-the-drink" value-added service.

Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and checkart @telechoice.com.

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Carrier Performance Measurement

Looking to verify carrier promises

By David Rohde

The next time you buy a fast-packet service such as frame relay — whether it's a renewal of an existing deal, an expansion of a trial network or the first time out of the blocks — you'll probably find that you've bought something other than pure transport.

Rather, if current trends hold, you'll be buying an application-specific WAN service that purports to carry a specific type of traffic — such as IP, IPX or SNA —across the region or country in a certain amount of time, with a distinct priority over other traffic.

Sound good? Here's the problem: If another current trend holds — namely, the continuing failure of telecom reform to enable a single carrier to carry traffic end to end — how can a large long-distance carrier not only guarantee network availability and latency, but also prove that it has met its guarantee?

Answer: It really can't without a little help from your customer premises equipment (CPE). That's where WAN service-level management and measurement come into play.

A new generation of smart DSUs/CSUs, combined with database servers that store and report reams of network performance data, can help verify that your carrier is meeting the service level agreements that are becoming a standard part of the frame relay world.

And you'll need that data if, like many other users, you demand increasingly detailed service level agreements before turning previously limited frame relay nets into true multiprotocol, mission-critical corporate backbones.

A word to the wise: Tread carefully before relying on what appears to be a cheap solution to a complex problem. There may be many exceptions in this world to the old maxim, "You get what you pay for," but service-level measurement doesn't appear to be one of them.

The stakes rise

The stakes in measuring carrier performance are growing higher. Sprint Corp. recently revamped its frame relay service to split it into two distinct service offerings: Frame Relay for LAN and Frame Relay for SNA. Both offer an end-to-end latency guarantee that varies according to access channel speed, with SNA traffic taking priority at any given selected bandwidth (*NW*, Aug. 4, page 6).

In addition, Sprint issued an end-to-end network availability guarantee of 99.5% for LAN and SNA services, and it maintained its existing guarantees to deliver committed and discard-eligible traffic at certain percentages.

The flip side of all this is price, which changed under the new Sprint service offerings. According to an analysis by broadband data consultants at telecom consulting firm TeleChoice, Inc., for some network configurations Sprint now has the highest frame relay prices in the industry, exceeding even AT&T (see graphic).

Enter Sprint's partner, Visual Networks, Inc., in Rockville, Md. All new Sprint frame relay users get the option of installing the vendor's Visual UpTime system, a package that consists of an intelligent DSU/CSU at each customer location, plus a database server and management software. Probes in the DSU/CSU measure the number of frames transiting the network and the number of frames discarded. And because the system also is installed at Sprint's network operations centers, the carrier and users have access to the same information, cutting down on the likelihood of a dispute over the data.

Significant for Sprint's new services, the box also supports intelligent management agents that measure network delay and can report whether Sprint is meeting end-to-end latency metrics. That's a task analysts say can be done only via CPE at each network node, instead of at carrier switch locations separated from the customer by local exchange, carrier-provided access pipes.

HIGHER STAKES IN PERFORMANCE MEASUREMENT

SNA over frame, meshing and higher speed ports all take a rising toll on your monthly frame relay cost.

Type of frame relay network	Low-speed SNA	High-speed SNA	Low-speed LAN	High-speed LAN
AT&T monthly price	$1,470	$4,292	$1,560	$5,040
MCI monthly price	$1,268	$3,476	$1,364	$3,860
Sprint's old monthly price	$1,580	$4,087	$2,000	$4,250
Sprint's new monthly price	$1,497	$4,447	$1,533	$4,240
WorldCom's monthly price	$1,093	$3,180	$1,191	$3,184

Network descriptions:

Low-speed SNA: Five-site star network; 64K bit/sec ports at all sites; 16K bit/sec duplex permanent virtual circuits (PVC).

High-speed SNA: Nine-site star network; 512K bit/sec port at host, 64K bit/sec at remote sites; 64K bit/sec duplex PVCs.

Low-speed LAN: Five-site partial-mesh network; 64K bit/sec ports at all sites; 16K bit/sec duplex PVCs.

High-speed LAN: Five-site fully meshed network; 256K bit/sec ports at all sites; 64K bit/sec duplex PVCs.

SOURCE: TELECHOICE, VERONA, N.J.

Don't delay my round trip

But Sprint is hardly the only path to Visual UpTime. Roger Hall, telecommunications manager at Richmond, Va.-based brokerage house Wheat First Butcher Singer, Inc., installed the system last year when he began migrating LAN-to-LAN applications from a leased-line network to AT&T's frame relay service. And it will be a key tool as he begins to migrate SNA applications to the frame relay net.

"Carrier networks typically measure network delay from [carrier] switch to switch," Hall says. "We need to see it end to end, so I have to [measure] that myself." Wheat First's frame net includes 127 of the firm's operating locations plus 20 to 30 additional sites of small, local brokers that clear their transactions through Wheat First.

Even though Wheat First has two years to go on its three-year frame relay contract with AT&T, the company recently issued a comprehensive request for proposal (RFP) for voice and data services. The company's contract for bulk outbound and inbound voice services from AT&T has expired and is now being maintained month to month. Even the remaining term of the AT&T frame relay contract doesn't seem to be a major issue, Hall says. In MCI's response to the RFP, MCI guaranteed it would buy out the AT&T frame relay contract if Wheat First changed carriers.

But according to Hall, MCI didn't respond to a question in the RFP asking whether the carrier could guarantee that the end-to-end, round-trip delay on an SNA terminal-emulation application transiting the frame relay network would not exceed 120 msec. AT&T says it could provide such a guarantee, but only within its own frame relay cloud, not including the local access pipe.

In general, there are two ways of pricing WAN service measurement tools. One is to offer them as straight add-ons to frame relay service. The other is to include them as part of a managed frame relay offering but limit availability to customers of the managed service. That was the original approach of Ameritech Corp., which last year added the Network Health reporting tools from Concord Communications, Inc., in Marlborough, Mass., to its managed frame relay, ATM and switched multimegabit data service offerings (*NW*, Aug. 26, 1996).

Either way, the costs add up. For Visual UpTime, the database server and management software cost $17,000.

The smart DSU/CSU costs $1,200 to support a 56K bit/sec frame relay connection, up to $3,500 for a T-1 site, and one is needed at each customer location to provide the end-to-end data. ■

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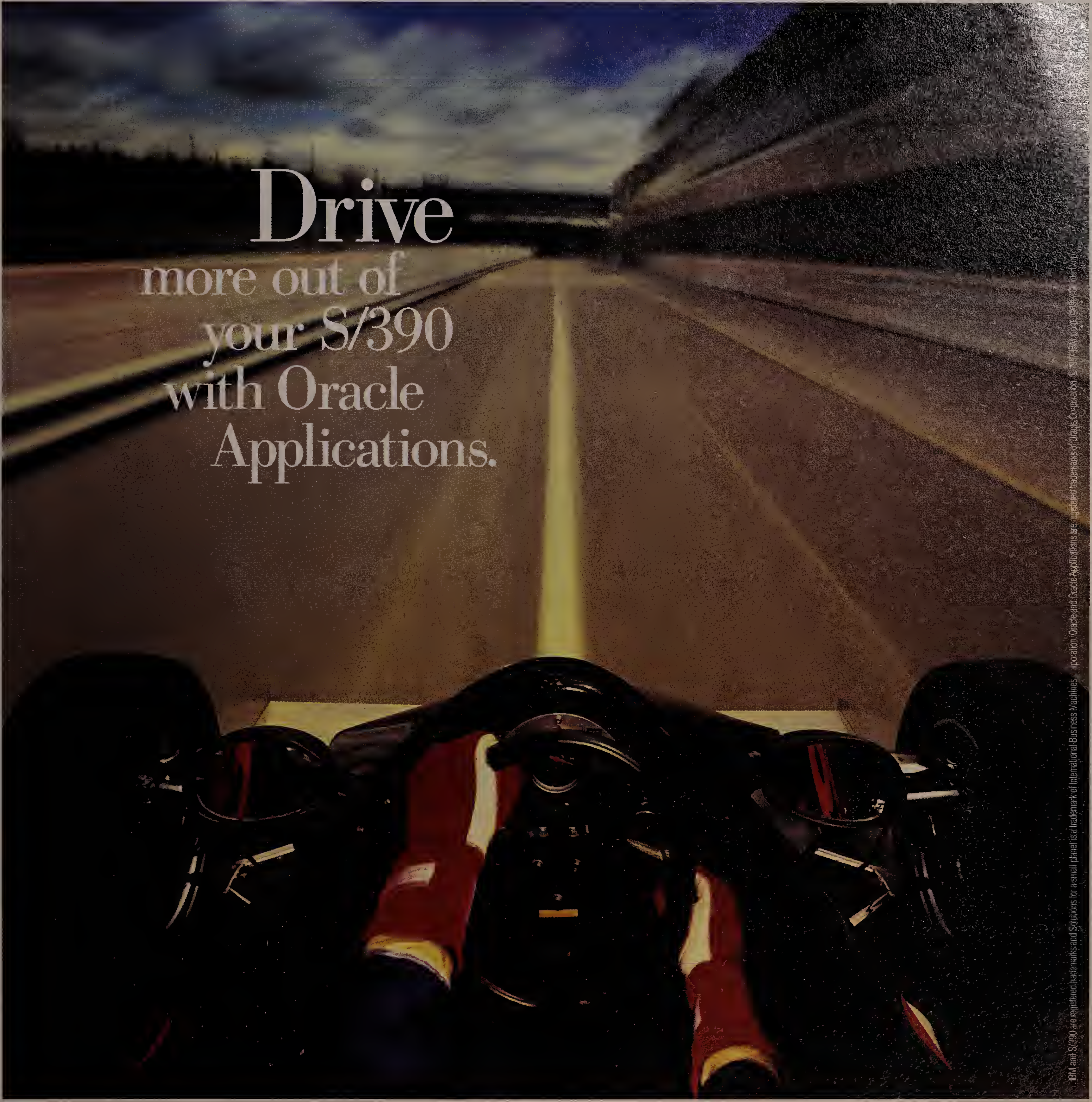

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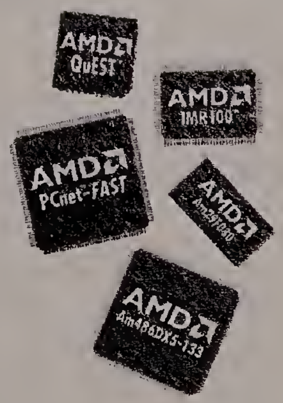

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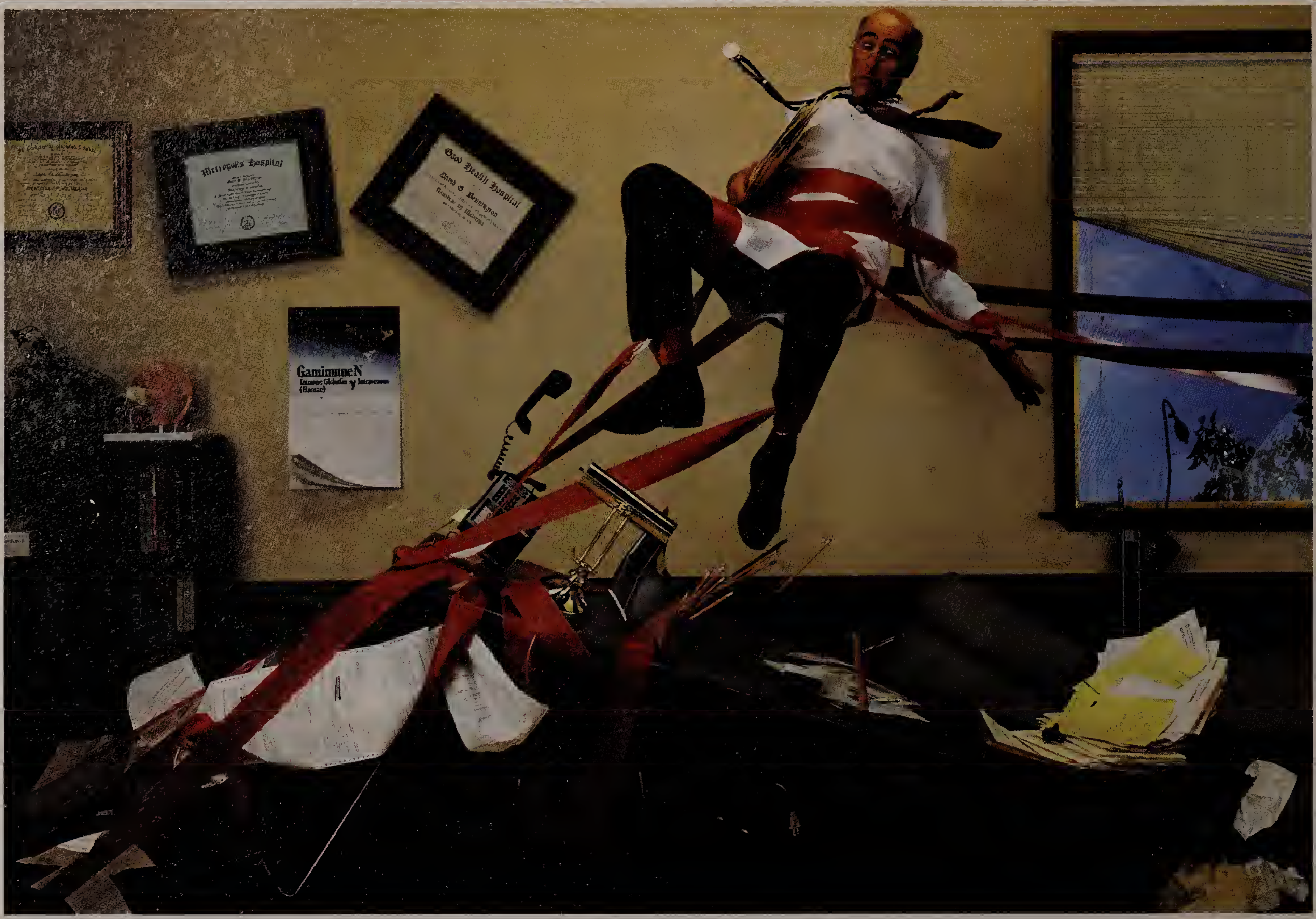

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Briefs

SAP America, Inc. *and* **Intel Corp.** *last week announced plans to form a company that will focus on developing a low-cost Internet-based* **electronic commerce** *offering.*

The new company, **Pandesic LLC,** *will be equally funded by Intel and SAP.*

Pandesic will rely on SAP's business process software expertise and Intel's logistic management skills to deliver products and services for companies entering the consumer-to-business and business-to-business electronic commerce marketplaces, officials said.

The company will be based in Sunnyvale, Calif. Intel Vice President Harold Hughes, Jr. will become chairman of Pandesic.

USWeb Corp., *a nationwide Web site systems integrator based in Santa Clara, Calif., last week announced several partnership agreements.*

Joe Firmage

CEO Joe Firmage said USWeb will **provide systems integration** *for Pandesic LLC, a supplier of electronic commerce products.*

USWeb also struck a deal with **Hewlett-Packard Co.** *under which USWeb will endorse HP's NetServer machines as Internet/intranet platforms.*

Connect, Inc. *next month plans to ship a client/server tool kit for managing Connect's Web-based OrderStream and One-Server applications, which are used in sales, marketing, order formulation and customer service.*

The new offering, Application Workbench, lets developers store the applications' business objects in HTML and Java formats in a repository.

The tool kit will cost $5,000.
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A new face for Sybase

President Chen says Oracle has left Sybase some openings.

By John Cox

With the abruptness of a summer storm, change has swept through the management ranks of struggling database giants Sybase, Inc. and Informix Software, Inc. While Robert Finocchio has taken over as chairman, CEO and president of Informix amidst the departure of former head honcho Phil White, Sybase has named John Chen as its new president and chief operating officer. He will report to Sybase Chairman and CEO Mitchell Kertzman.

WHO IS JOHN CHEN?

Title:	President and chief operating officer for Sybase
Previous job:	CEO for Siemens Pyramid Information Systems
Notable achievement:	Negotiated the merger between Siemens Nixdorf and Pyramid Technology in 1995
Education:	Holds degrees from the California Institute of Technology and Brown University

Chen, a computer hardware industry veteran who most recently served as CEO for Siemens Pyramid Information Systems, Inc., knows his job will be tough. Sybase is still working to right itself financially as hard-charging rivals Oracle Corp. and Microsoft Corp. appear to be getting stronger. But Chen said he is hopeful that the Internet's growing popularity will open up new opportunities for Sybase. He also is optimistic about a slew of distributed transaction applications introduced by Sybase earlier this year. Chen recently spoke to *Network World* Senior Editor John Cox.

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Get more info online:

- The latest Sybase financial and stock news
- An overview of Sybase's Impact-Now Web client/server line.

Network World Fusion

Isn't this a huge shift for you, moving from a hardware company to a software company?

If you're asking, 'Can I sit down and write code,' the answer is no. But if I can get involved with customers and the [third-party] channel partners, I can add value to Sybase.

Like what?

My experience has always been on Unix and enterprise computing. I'm coming [to Sybase] from the side of managing channel relationships and creating product strategies and spending time with customers.

So how does that fit into what Sybase needs to do right now?

My first priority is to look at all the marketing programs and get them more focused. Today, the marketing stories are confusing.

And second?

I want to focus on building a channel partnership strategy. Sybase has a lot of good customers. But it certainly has not had a deep enough pipeline among value-added resellers, packaged application vendors and others to reach these customers.

But Oracle is strong in both areas. Won't you just be beating your head against a wall?

Oracle is a hell of a marketing machine. But they're moving [away from their core database engine] to a focus on applications. Here, I see opportunities for Sybase. Maybe we can capture some mind share with those companies, like SAP America or PeopleSoft, that are concerned about Oracle as a competitor.

How will you do that?

I'm not going to focus on making Oracle the enemy. There's no reason to fight Oracle over the stuff they already do well. Instead, we'll focus on middleware and exploit this window [of opportunity] with SAP and PeopleSoft and the others. We can provide the network tool sets for a distributed environment.

Sybase just completed a profitable quarter, but revenue actually did not grow much compared with a year ago. Are there signs customers will buy these tools and middleware products anytime soon?

The products are there to grow the revenues. SQL Anywhere [a workgroup and desktop database] has been very strong. So is Sybase IQ [a fast query processing server], a product I really want to push. We just need to do it.

Any other challenges Sybase faces?

I want to stabilize the company so we can reduce the [employee] turnover. Over the past two years, there has been significant turnover in sales and product development. It's easing off, but it's still at a fairly high level.

Sybase has always prided itself on its corporate culture. Does the turnover mean that's changing?

The culture is one of the company's strengths. Even when people leave, they usually don't go to competitors. Instead, they tend to go into a start-up company. I've talked with people who've left Sybase, and you don't encounter a lot of bitterness. ■

In-Site

Kodak takes shot at Web-based commerce

By Ellen Messmer

Rochester, N.Y.

For the first time, camera king Eastman Kodak Co. has bypassed its traditional retail distribution chain to sell a Web camera package over the Internet.

Kodak has advertised its wide array of film and camera equipment on its Web site since it went up in February 1995. However, it avoided any possible antagonism of Kodak retailers by directing Web visitors to the nearest store.

But last week, Kodak announced it will take orders from buyers in the U.S. for the $219 Kodak Digital Science DC20 Web Camera Kit through its Web server — which happens to be the Netscape Communications Corp. Enterprise Server. The buyer must have a Secure Sockets Layer (SSL)-compatible browser so the purchase can be processed in encrypted form. If the buyer does not have an SSL browser, Kodak will take the order by fax or toll-free telephone number.

"We've been on the Web for two years doing marketing online, and this is the logical next step," said Kathleen Sheehan, Kodak's director of strategic development in the Internet marketing division. Kodak is taking a wait-and-see approach to gauge customer and retailer reactions.

PHILMATT

Kodak retailers can sell the actual DC20 Web Camera, but the camera bundled with the software kit is sold exclusively online, Sheehan explained. "This is an exclusive package that allows consumers to easily

See Kodak, *page 32*

Tumbleweed keeps messages rolling

By Paul McNamara
Redwood City, Calif.

Who needs UPS anyway?

Strike or no strike, Tumbleweed Software, Inc. wants corporate customers to be asking that question when they need to move complex, multipage documents in a hurry. The company's new client/server messaging product, Posta, promises to do the job securely over the Internet without the file corruption and attachment difficulties associated with traditional e-mail.

Posta 1.0's debut this summer has attracted interest from financial, legal and publishing firms, including TimesFax, a division of the New York Times Co. TimesFax is considering Posta as a supplemental delivery vehicle for its daily eight-page newspaper-by-fax synopsis.

"The problem with e-mail delivery is that TimeFax is a [Portable Document Format] file, so we would have to send it as an attachment, and that doesn't always work," said Stephanie Serrino, business manager at TimeFax.

Posta Desktop users choose a document to send and enter the recipient's e-mail address or a mail list. The document is stored on a Posta Server, and the intended recipient is sent e-mail that contains a URL, which can be clicked on or cut and pasted into a browser.

To access the document, the recipient must have a Tumbleweed Envoy 7 viewer or download the client software from the company's Web site (www.tumbleweed.com/download.htm).

PROFILE: TUMBLEWEED SOFTWARE, INC.

Based:	Redwood City, Calif.
Founded:	1993
Key Officers:	Jeffrey Smith, president and CEO; Joe Consul, CFO
Key Product:	Posta, client/server software designed to securely deliver electronic documents over the Internet without difficulties associated with many e-mail attachments
Fun Fact:	A privately held company whose investors include Draper Fisher Associates, Sofinnova, Bayview Partners, France Telecom and R.R. Donnelley & Sons.

Posta security includes user authentication and Secure Sockets Layer. Version 2.0, due in November, will add digital certificate capabilities as well as support for Solaris and Oracle Corp. databases.

While Serrino said Posta "seems like a very efficient way to send documents," she is reserving judgment as to whether it will fulfill TimeFax's needs on a large scale.

"People may not be familiar with e-mail that gives you a URL that you may have to cut and paste and open a browser with," she said. "A lot of my clients are hotels in very remote areas of the world, so that might be a stumbling block."

A Posta starter package costs $3,999 for the server software and 20 end-user licenses. Additional end-user licenses cost $189 each.

Services offering similar capabilities are in the works by the U.S. Postal Service and, ironically enough, United Parcel Service of America, Inc.

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Microsoft acquires video streaming firm VXtreme

By Sari Kalin
Redmond, Wash.

Microsoft Corp. last week announced the acquisition of VXtreme, Inc., an Internet video and audio streaming start-up, in an effort to make Microsoft's streaming media offerings more scalable.

The news came just two weeks after Microsoft announced a licensing and standards development deal with and minority investment in VXtreme's chief competitor, Progressive Networks, Inc. Last week's announcement also coincided with Microsoft's launch of its NetShow 2.0 streaming media server. The launch was accompanied by more than 30 vendors voicing support for NetShow 2.0 and Microsoft's Active Streaming Format.

Microsoft would not release financial terms of the VXtreme deal.

The company pitched this deal and its recent Progressive Networks agreement as complementary, saying that VXtreme's adaptive compression technology would be a plus for NetShow.

"With the acquisition of VXtreme, we're acquiring additional technology that will allow us to take our product line and extend it," said Paul Maritz, Microsoft's group vice president of platforms and applications. VXtreme's technology will let developers "author once and deliver across a range of bit rates and bandwidth to different customers," he said.

VXtreme, a Sunnyvale, Calif., company founded two years ago, develops the Web Theater line of Internet video software. Its products include Web Theater Server, a streaming video and audio server; LiveStation, for delivering live video over the Web; Producer, Web video development tools; and Web Theater Client and Client Gold, plug-ins to Netscape Communications Corp.'s Navigator and Microsoft's Internet Explorer browsers.

Microsoft will continue to sell VXtreme's product line until the two companies merge their code base and VXtreme's technology is included in a future version of NetShow, Microsoft officials said. VXtreme employees have already begun moving to Redmond, Wash., where Microsoft is based.

Cisco Systems, Inc., Informix Software, Inc. and Softbank Ventures, Inc. each announced that they had bought a minority equity stake in VXtreme in January.

Microsoft's NetShow 2.0 server is available free from the Web until the end of the year, Microsoft officials said. The NetShow 2.0 client is available for Windows 95, Windows NT, Windows 3.1 and Unix. Microsoft plans to soon release a Macintosh client.

Kalin is a correspondent with IDG News Service in Boston.

Red ink, micromanagement doom Verity CEO

Search engine company looks to focus on knowledge management technology.

By Chris Nerney
Sunnyvale, Calif.

Verity, Inc. officials said Philippe Courtot's inability to steer the intranet search engine company toward profitability led to his ousting two weeks ago as president and CEO.

But analysts pointed to what may have been a larger problem: the recent departure of top technical talent, possibly spurred by Courtot's reported penchant for micromanagement.

"He virtually eliminated the entire original team," said Jim Bair, research director at Gartner Group, Inc. "A lot of the intellectual capital for the company went with the people that disappeared."

Courtot was dismissed by Verity's board of directors on July 31. A Verity spokeswoman said the board grew impatient with the company's lack of profits and doubted Courtot could reposition the company in the potentially lucrative "knowledge management" market.

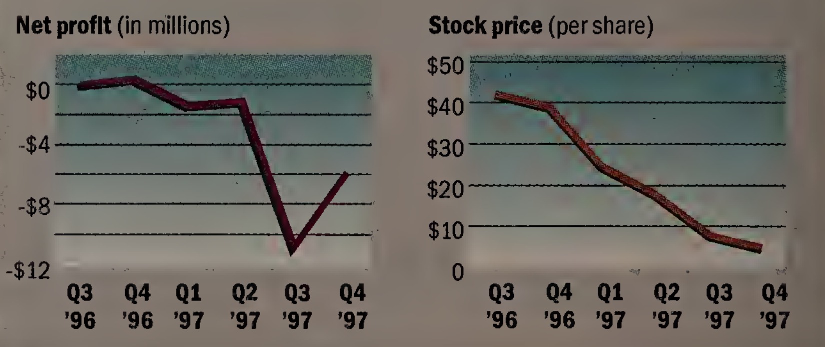
Replacing Courtot is Gary Sbona, who Verity officials said has more than 20 years of experience in information technology.

Verity, a publicly traded company founded in 1988, has long been a darling of analysts covering the information search-and-retrieval industry, despite lagging in market share behind Fulcrum Technologies, Inc. and Dataware Technologies, Inc.

The company's technology, notably its flagship Search'97 application platform and its new Intelliserv knowledge management tool, has earned high marks.

And Verity scored a recent coup when research and consulting giant Ernst & Young announced it would integrate Intelliserv into its knowledge management architecture.

However, Verity has sustained nearly $17 million in net losses in the past two quarters, though much of that was due to write-offs from three acquisitions.



VERITY'S SLIPPERY SLOPE

Over the past six quarters the search engine vendor's losses have continued while its stock price has plummeted.

Gartner's Bair said Verity's real problem is the loss of engineering expertise, most notably the resignation last month of company cofounder and Chief Technology Officer Phil Nelson.

"The impact of losing your senior management is that your customers start to hurt," Bair said. "The general feedback I'm getting from the field — both OEMs and end users — is that Verity is difficult to work with.

As for the cause of turnover, he said there was "a lot of micromanagement."

While questioning Courtot's management style, Bair credited him with "having a great vision both strategically for his business and technologically for the information retrieval world. He always brought tremendous insight."

Hadley Reynolds, research director at Delphi Consulting Group, said Verity's recent acquisitions — it has purchased three companies this year alone — may have been unwise.

"They spent a lot of money, and they could easily have been more profitable if they hadn't taken these charges for the acquisitions," he said.

Still, Reynolds said, "All of Verity's competitors are extremely happy they don't have to compete against Courtot anymore. ■

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NET INSIDER

An example of the Internet of the future

This is being written on the way home from a week in Taiwan. I went to give a talk about various U.S. data networking initiatives including the Next Generation Internet (NGI) proposal, the Very High Speed Backbone Network Service (vBNS) and Internet II. The Taiwanese are very interested in these plans because they have ambitious data networking plans of their own.

Scott Bradner

You can get a hint at the extent of the current Internet presence in Taiwan when looking at the throw-away tourist guide you can pick up at the airport. Almost all of the hotels, many of the restaurants and the larger tourist shops list Web or e-mail addresses in their ads.

There are now over 1.2 million people in Taiwan "online." The government's National Information Infrastructure plans call for 3 million people (one-seventh of the population) to be online within the next three years. The government is being very aggressive in putting information on the Internet and bringing the 'Net into the educational environment. They plan to have all senior high and vocational schools on the 'Net within three years and all junior, middle and primary schools online within five years. At the same time they plan to install enough equipment in the schools to attain a ratio of 20 students to one networking/multimedia computer (at a minimum).

It is important to note that this is being done in a basically non-English-language environment. Most Taiwanese speak little or no English and the Internet is predominantly English. The URLs in the tourist guide are English (as much as URLs are in any language). They are not trying to change the native language of Taiwan so they must make the 'Net more accessible in Chinese. They will be putting up a "Global Chinese Content Center" for use by Chinese speakers around the world (about a fifth of the world's population).

Unlike most countries, the local (currently monopoly) telephone company is part of the revolution. Chunghwa Telecom Co. runs one of the largest of the 40 or so Internet service providers in Taiwan. It is very actively trying to figure out where else this technology can go, rather than ignoring it, as often happens, or actively fighting it, as happens too often. They see the Internet as the future and want to be part of that future.

Like Singapore and Hong Kong are trying to do, Taiwan is trying to become an Internet hub in the Asia-Pacific area. They are installing connections to many other countries in the region as well as lines to the U.S. But it seems to me that Taiwan is doing quite a bit more than adding external connections.

Why am I going on about what Taiwan is doing 'Net-wise? It's partly because I just spent a very busy but very rewarding week there, but more because the Taiwanese are embracing the Internet and making it their own, just as all nations could.

The Internet of the future will still be international, but it can also be tuned by each participant nation just as it can be tuned by each participant culture and community.

Disclaimer: Harvard is not a nation though some claim it has a culture — anyway the above observations are my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached via e-mail at sob@harvard.edu

Kodak

Continued from page 29

add pictures to Web pages and electronic documents, and to send photos in e-mail messages."

The move into direct camera sales is just one of several Web-driven electronic commerce changes happening at Kodak. Kodak also is planning to phase out an older "homegrown" dial-up electronic commerce system based on MS-DOS that allows smaller resellers to place orders or do price lookups.

"It will be evolving into a Web-based system," said Judy Goonan, Kodak's Internet commerce manager.

The central question is not how to take the retailer's transactions over the World Wide Web, but how best to integrate Web-based purchases or inquiries into existing Kodak automated order-processing and accounting systems.

With its larger trading partners, Kodak widely uses electronic data interchange, which offers standardized transaction sets for purchase orders, acknowledgements, shipping information and even bank payments.

Kodak and its trading partners have considerable time and money invested in EDI mapping and translation software. The software converts back-end business data into EDI format for sharing across value-added EDI networks.

Small businesses often lack the skills or financial clout to use EDI, but they will be able to easily place orders on the Web with a browser. The question facing Kodak is whether this data off the Web will be converted into EDI format, other middleware or go directly into back-end systems, Goonan said.

As part of the change spurred by Web-based commerce, Kodak is abandoning older legacy systems to move to SAP AG R/3 enterprise business software. Scheduled to ship in September, the SAP business applications for finance, personnel, payroll, manufacturing, human resources and distribution can integrate Web pages as part of its centralized data management. ■

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I'm looking for an unbiased opinion on IntranetWare vs. NT. I work for a large company that thinks NT is the way to go, but we have millions of dollars invested in Novell servers. I'm inclined to go with a mixed environment of NT workstations and Novell servers using ManageWise and Workstation Manager. Do you have any suggestions?

Via the Internet

First, I suggest you look into a three-day course, called 555 IntraNetWare: Windows NT Integration, which Novell offers. It can give you a good overview on the issue and help you prepare for a talk with management about the decision.

Here are some of my observations. Networks consisting of a mixture of IntranetWare and NT are becoming more common. Security-conscious companies, for example, are combining NT Workstation with Novell's NetWare Application Launcher for secure networks. Novell's NT Workstation Manager provides the best of both worlds in terms of security at the workstation and being able to handle most, if not all, of the configuration issues from the server.

But the biggest item to consider for an enterprise network scenario is the scalability of the network operating system. Novell Directory Services can be partitioned to the point that only the part of the directory services database you need is on the local server. On the other hand, Windows NT replicates the entire database from the primary to the backup domain controllers in a given domain.

To get domains in NT to work together seamlessly, you'll have to build a detailed set of one- and two-way trust relationships. Microsoft has a formula — N(N-1) — for determining the number of trust relationships necessary in a multi-server configuration. If you have six servers (6 (6-1)) then you would have 30 trust relationships to enter and maintain.

How to keep the spam off your net

By John Junod

If you own and operate a Simple Mail Transfer Protocol mail server, chances are you have been a victim of spam mail — perhaps without even being aware of it.

Spam, as the e-mail community recognizes the term, is unsolicited commercial e-mail: the electronic version of all that colorful junk mail the U.S. Postal Service delivers every day.

The burden of delivering postal junk mail is on the sender: They pay for the printing, handling and postage. You simply have to weed it out. With spam, however, it costs the sender next to nothing to create and send large numbers of messages, but it can cost the recipients and the handlers plenty. For example, users lose time and money in connectivity costs, and Internet service providers and other owners of commercial e-mail servers lose control of resources they need for their businesses.

The spammer, however, gets a free ride via SMTP. SMTP was created in the early days of the Internet to provide a standard communications protocol for data transfer among a multitude of different computer systems. SMTP was designed not to question the content of a message, the nature of its origin or its ultimate destination, but to transfer a string of packets from wherever it was coming from to wherever it was programmed to go. This allows different computers to share the same electronic highway, where the traffic laws are common enough for even incompatible systems to mutually understand each other.

While the required openness of SMTP is a blessing, it also is its curse. It provides the purveyors of unsolicited commercial e-mail with free reign to relay thousands of promotional messages off any SMTP mail server in the world — sometimes tying up the servers for unacceptable periods of time and degrading the service for legitimate users.

Usually, it's not until you have noticed an unexpected load on your mail server, which slows your network to a crawl, that you realize your mail system has just been hijacked by spam. Your SMTP server, without questioning the motives or implications of the request, dutifully obeyed the spammers' instructions to deliver 500,000 advertising messages to unwilling recipients. Or maybe you find out you've been spammed after 100,000 of those spam recipients flame you because the spammer made it look like the mail originated from your system.

Fighting back

Today, there are several methods you can employ to prevent spam from infiltrating your internal e-mail community and hijacking your server. The simplest way to avoid receiving spam is to deploy a filter that blocks e-mail from any known source of unsolicited commercial e-mail. The problem is knowing all the sources and denying them access without cutting off mail you really want to receive.

There are two ways of preventing unauthorized use of your SMTP mail server as a relay for spam.

The first is to deploy two servers: one, external to a firewall, for accepting mail intended for your users, and the other inside a firewall, dedicated to sending mail only from your users to the outside world.

Under this scenario, the SMTP server on the outside is not configured to relay anything outside of your domain, hence all mail not destined for recipients inside your firewall will be rejected. The internal SMTP server is fully enabled for relay, so the only mail it will pass on is legitimate mail from your user community (see graphic).

The cost of security

This can be an expensive proposition once you add up the cost of the firewall, hardware and software for two servers. This may work for large companies with deep pockets, but for most cost-conscious operations a second solution is called for: a single SMTP mail server with built-in relay-prevention features.

Certain SMTP mail servers on the market allow you to deny the relay of mail from any server other than the ones you have specifically approved. This feature was first included in SendMail 8.8 for Unix and is now available in two mail servers for Windows NT — IMail Server 4.0 from Ipswitch, Inc. and Post.Office 3.1 from Software.com, Inc. Other mail servers for Windows NT, including Lotus Development Corp. Notes and Microsoft Corp. Exchange, offer the ability to block e-mail from identified spammers, but they currently do not allow the server to refuse unwanted relays.

Ideally, a server with a full complement of antispamming features should allow you to not only block undesirable sources of junk e-mail, but also protect yourself from unwanted relays.

The technology for controlling the rising tide of unsolicited commercial e-mail and preventing the unauthorized use of Internet resources is still evolving.

The openness of SMTP will always make us vulnerable to abuse because we need a system of common relays throughout the Internet to guarantee delivery of e-mail to every location on the planet, which is the whole idea.

Junod is chief technology officer and director of research and development at Ipswitch, a Lexington, Mass.-based Internet software developer.

UP CLOSE

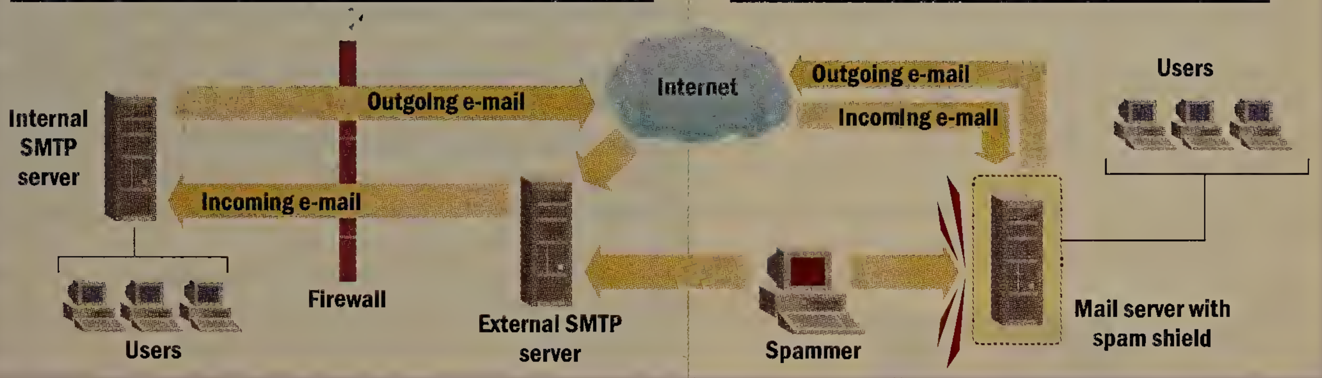
Two ways to stop spam

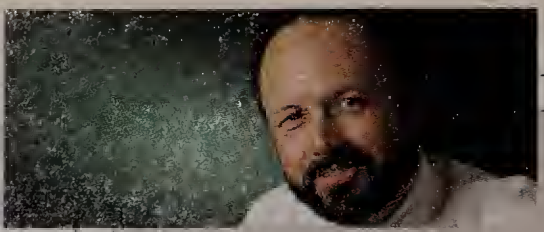
Junk e-mail, or spam, can have a wide-ranging negative impact on your net.

Users see increased connectivity costs and ISPs tie up bandwidth transporting the messages. The spammer, however, gets a free ride. Here are a couple ways to stop the madness.

1 Two servers are better than one: In this two-server scenario, the external SMTP server is dedicated to receiving mail for your users, but it refuses to relay junk mail. The internal SMTP server is configured to relay all mail, but it is accessible only to your users. Spammers are rebuffed by the external server and cannot reach your internal server behind the firewall.

2 Shields up! Spam blockers such as IMail Server 4.0 from Ipswitch, in effect, set up a "spam shield," refusing to relay bulk e-mail messages from known and unknown sources of spam mail while allowing normal flow of traffic to and from approved domains.





EDITORIAL insights

Geeks and nerds, arise!

Forget the UPS strike. Let's address a far more serious employment issue: the ongoing abuse of IT workers.

Consider this: the best trained, most sought after, highest paid workers in the U.S. economy are routinely insulted and affixed with negative stereotypes by the general, business and, yes, even the computer trade press.

Oh, sure, it started off in good fun. The terms "geek" and "nerd" were perhaps used as signs of affection — patronizingly enough — for the technologically elite. (For an interesting take on this, check out this piece on the *San Jose Mercury News'* Mercury Center at http://cgi.sjmercury.com/living/networds.htm.)

But enough is enough. Consider these examples:

- "Forget the huddled masses, send **nerds**" reads the blaring headline in a recent *Business Week* story on the shortage of programmers in the U.S.
- "A high-tech tale from the Valley of the **Geeks**," states *Fortune* in a review of a novel set in Silicon Valley.
- "Vegas preps for the invasion of the **nerds**," from a column in Ziff-Davis' *PC Magazine.* (The ZDnet site even offers this description of a **nerd** from its glossary: "A person typically thought of as dull socially. Nerds often like technical work and are generally introspective. Contrast with hacker, a technical person that may or may not be a nerd.")
- In an article on the wired town of Villena, Spain, *The Wall Street Journal* writes: "'We're seeking to catapult this town into the 21st century,' [says one resident]. But is the town ready for that? Already, some parents fret that their children will become lonely **nerds** or computer hackers."
- "Dilbert is every IT manager's favorite **nerd**," in, alas, *Network World.*

The instances of abuse are too numerous to record here. For the sad evidence, simply do your own AltaVista or Yahoo search.

Worse, the phenomenon is decidedly one-sided. Workers in low-tech, aging industries are spared the ignominy of repeated slurs. Why doesn't the press refer to employees in the auto industry as tireheads? Why aren't steelworkers and the executives who run the mills labeled beambrains or plateheads in news and features articles?

Everywhere, corporations search hungrily for new IT talent: LAN administrators, Java programmers, database administrators, help desk personnel. We cannot quench our thirst for these skills. Yet what message do we send our children, I ask you, when we regularly demean our best and brightest with these shopworn tags?

IT is the engine that drives the world economy, and you are the fuel that powers the engine! What must be done to end this scourge?

Nerds and geeks of the world, arise! You have nothing to lose but your nicknames.

John Gallant, editor in chief jgallant@nww.com

Venture Over the Horizon • Kevin Fong

Developing a road map will keep your network on course

From talking to potential customers over the years, I have found that corporate networks often grow piece by piece without any vision — or road map, if you will — of where they should be five years from now or where emerging technologies will fit. Users that do think ahead when designing their networks typically take one of four approaches.

Following in the timeworn footsteps of those who believed no one ever got fired for buying IBM, many users currently put their faith in Cisco. The drawbacks to this approach are obvious.

I'm not saying Cisco isn't a great company with great products or that it isn't capable of creating a road map for your network. But relying on one vendor is not only the most expensive strategy, it also makes you dependent on that vendor in an era when self-reliance is preached for good reason.

Hiring a consultant is another approach to creating a network road map. This can work out well, provided it is not just an excuse to avoid spending the time educating yourself.

The quality of a consultant's work is only as good as the time you spend managing it. It is important to set milestones and meet at least biweekly. Use the time with your consultants to educate yourself about the decisions that are being recommended. Otherwise, you're asking for trouble when you begin to implement the recommendations.

Educating yourself and your organization takes time. If you need help because you lack the human resources, take the third approach to creating a network road map: Hire a systems integrator.

Integrators can give you the expertise of a consultant and the arms and legs needed to carry out network design. However, this is an expensive approach. From what I've seen, companies spend three to four times the cost of the equipment they purchase when they use an integrator.

Furthermore, it is even more important to stay involved in the decision-making process when relying on integrators than when using consultants. That's because an integrator actually will be putting together the hardware and software that becomes your network.

Finally, there is the do-it-yourself approach. This works only if you are fortunate enough to have the budget and in-house experience to architect and build your own network.

How can you evaluate your corporate capabilities? Start by evaluating your organization's vision. If you don't already have a chief network architect or chief technical officer position within your company, it's a good idea to create one.

Then start modestly. Find a project isolated enough from the rest of the company that it is not mission-critical and then measure your organization's ability to execute.

Finally, put part of your budget aside and think of it as research and development funding. Use the money to experiment with new products and technologies on a trial basis. You may even want to create a test network that is isolated from the production network.

I favor the do-it-yourself approach. But no matter which of the four methods you use to create your network, you need to educate yourself and stay involved.

Attend industry trade shows, participate in standards bodies that are important to you and monitor the key Internet newsgroups for the committees you pick. You do not have to be a technical guru, but you need enough detailed knowledge to make good decisions. Be sure the experts you have around you give good advice that serves your organization and not some vendor or technical zealot.

Complacency has no place in today's rapidly changing network world. Whether it is you or someone else on your staff, it is important for your organization to have an individual who listens to different vendors and keeps up with the technology that will provide your company with the vision it needs to make critical network architecture decisions.

Fong is a general partner of Mayfield Fund, a venture capital firm based in Menlo Park, Calif. He can be reached via the Internet at kfong@mayfield.com.

MESSAGE QUEUE

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, *161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.*

No critical mass

Regarding your article "ATM leader FORE loses execs to Gigabit Ethernet start-ups" (July 21, page 1):

We trust you know what your readers are interested in reading. However, we were frankly a bit puzzled as to why a story about four employees departing an established vendor for start-up opportunities would be among the week's most important stories. So this is front-page news in 1997?

To directly state that a "feeding frenzy" or "mass exodus" has been created by four employees departing a company with over 1,300 employees would appear to be a massive exaggeration.

The Internet • Douglas Welch

Network vigilantes should get out of Dodge

Recent events have once again shown that the Internet, despite its high-tech commercial leanings, is still a lawless Wild West town.

Major Web sites are experiencing denial-of-service attacks, domain names are being hijacked or turned off, and the common response to any sort of mass e-mailing is a mail bomb that crashes the sender's mail server.

Meanwhile, the owner of AlterNIC, a company jousting for entrance into the lucrative domain name assignment market, has been redirecting users attempting to access the Network Solutions, Inc. Web site, which currently holds the exclusive right to assign domain names (*NW*, July 28, page 10).

People are taking the law into their own hands when what is really needed is a Marshal Dillon to clean up the town.

Obviously, no one wants to see the Internet turned into a police state. However, we can't afford to become victims of network vigilantes' misdirected attempts to enforce their interpretation of netiquette.

Vigilantes attack because they do not think their victims have any legal recourse. So the first step in reducing network vigilantism is to develop legal remedies.

If you're contemplating doing business on the Internet, have your corporate lawyer investigate methods of applying current laws to Internet attacks. There are laws that apply to forgery, libel, fraud and trespassing in the real world that also should apply in cyberspace. The challenge is to find the appropriate law and apply it. Better to prepare for such occurrences now than when you're under attack from a network vigilante.

MARTY BRAUN

A few well-prosecuted cases involving application of existing laws would do wonders to reduce the number of network vigilante attacks. It is time to get corporate lawyers working with law enforcement agencies and district attorney offices to provide a new rubric for Internet prosecution.

Legal remedies will require some sort of enforcement organization. There are a number of excellent nonprofit organizations dedicated to informing Internet users about viruses and system flaws. However, there is no group in place to help law enforcement agencies work with companies that are experiencing vigilante attacks.

Whether this group is an extension of the CERT Coordination Center (www.cert.org), an organization that currently only warehouses and disseminates Internet security information, or a newly formed consortium, we need an enforcement branch that can take on Internet cases. By working with local, state and federal authorities, this group could help develop a method for dealing with vigilante-created problems.

For example, one method might involve creating an Internet liaison within the local police department and district attorney's office. Local law enforcement often develops liaisons with other law enforcement groups at many different levels. These same connections could be used to effectively investigate online attacks.

In addition, companies that use the Internet could help law enforcement officials computerize their systems and increase their technical knowledge. Think about donating equipment and offering to help train law enforcement personnel to use it. The benefits will be returned a hundredfold as law enforcement begins to understand the problems vigilante victims face.

If local authorities are not up to speed on investigating computer crime, there are private solutions for companies willing to pay. Private investigation firms with computer skills could quickly develop a clientele of high-tech companies concerned about 'Net vigilantism.

One problem that incites network vigilantism is the inability of current government and business groups to solve the issues affecting everyone on the Internet. We have all seen the fight over domain name distribution, trademarks and the extension of top-level domains escalate. Until these problems are resolved, the frustration level will continue to grow and vigilantism with it.

Any solution will require Internet users to work within the existing system as much as possible and cooperate with one another to resolve these issues outside the courts.

Lashing out through false domain cancellations, domain spoofing and other attacks could and should damage the perpetrator's reputation.

Such actions also slow down the acceptance of the Internet as a valid commercial tool, affecting everyone's bottom line. More companies need to look back at the cooperative history of the Internet and integrate these benefits into their operations.

Network vigilantism grows out of frustration and the lack of means to combat irresponsible, uncooperative or even criminal behavior. It also grows out of the freewheeling history of the Internet.

Regardless of the cause, taking the law into your own hands is an idea that should have died with the Wild West. We need to work together, through proper legal remedies, to protect the Internet.

Welch is a computer consultant and freelance writer in Van Nuys, Calif. He can be reached via the Internet at dewelch@earthlink.net or www.digital-res.com/welchwrite/.

That's a "mass" of .003 of our workforce, or one-third of 1%, by the way.

Rich Borden
Manager, public relations
FORE Systems, Inc.
Warrendale, Pa.

Skip Memphis

Dave Kearns' column "Do you really need Microsoft's Memphis OS?" (July 14, page 20) is a masterpiece of common sense. So many people think they need the latest and greatest when a little innovation gets a job done well.

There is no need for a new operating system every two years. The expense is prohibitive, and the new bugs are enough to drive you nuts. Windows 95 bug fixes are in the thousands, OEM Service Release 2 has a pile of its own, NT 3.51 has five service packs and a huge (13M-byte) service pack has just been released for NT 4.0 — its third.

I agree 100% with Kearns that it is only beneficial to change when doing so improves productivity and does not cause demoralization and frustration among those using the product.

John Mullen
San Antonio, Texas

Architecture is key

In your Buyer's Guide to access routers (July 14, page 41), the analysis of Bay Networks' BayStack Access Node product and comparison with Cisco's 1601 was very good.

However, while the article mentioned the fact that the Bay product would have enough horsepower for even a second or third interface card, it failed to note that the main reason for this is the product's distributed architecture. In my opinion, this distributed architecture is one of the strongest reasons to buy the Bay product over the Cisco one. The Cisco 1601 is based on a centralized processing model, which slows it considerably in large-scale, Internet applications, which is what your article addressed.

Brian Lacy
Network engineer
CBE Technologies, Inc.
Portland, Me.

Your Buyer's Guide to access routers was very informative and should send many people in the right direction.

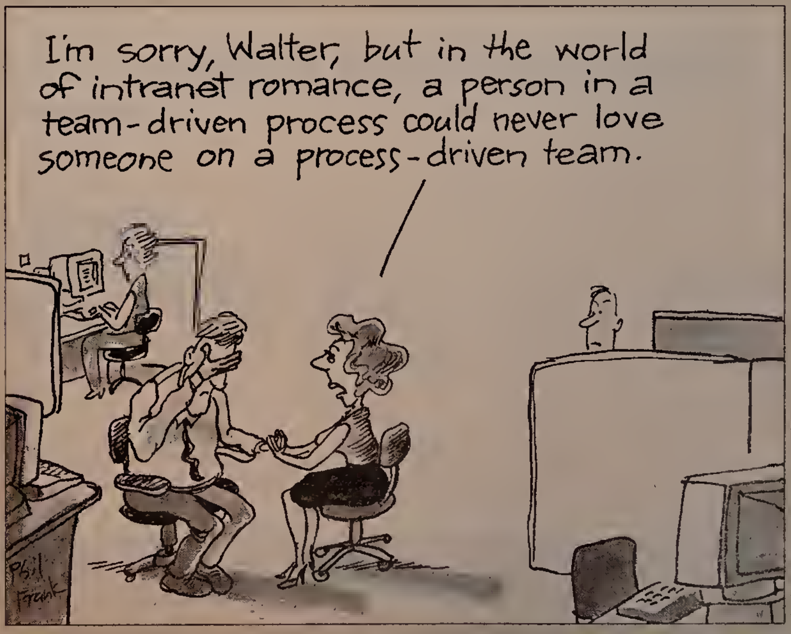
We currently have several Bay Networks routers in place and have been extremely happy with their performance and reliability. The ease of configuration is another attractive bonus.

We also have over a dozen Ascend Pipelines (Model 50s) in place, which interface to an Ascend MAX 4004 access concentrator. I agree with your article's assessment that these units tend to have a bit of a throughput lag and require a lot of tweaking. However, once you do find the proper configuration, these units are as stable as they come.

Ascend has come leaps and bounds with its software development for these units. I foresee some great things from Ascend as it matures.

John Diamond
Network analyst
Oneida Nation
Green Bay, Wis.

Teletoons


I'm sorry, Walter, but in the world of intranet romance, a person in a team-driven process could never love someone on a process-driven team.
Phil Frank

Phil Frank and Joe Trois baba@sfgate.com

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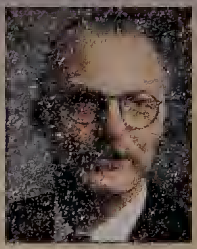

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Essentials of Networking and Data Communications

Technologies and Their Practical Application

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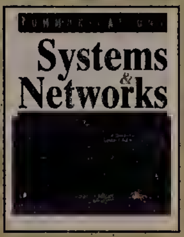

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Hot switches, cool features

HP, Cisco and FORE combine great performance and flexibility to lead tests of 100Base-T switches.

By Edwin E. Mier, Robert J. Smithers Jr. and Thomas R. Scavo

The Fast Ethernet switch market is hot, which accounts in part for the large number of products in this Buyer's Guide.

We tested the performance and manageability characteristics of nine of the top switches. See the ScoreCard at the bottom of the page for our ratings, and read the Review beginning below for the complete details. By comparing price and performance among the switches, we came up with a Best Buy — see the sidebar on page 39.

There are far more switches available than we could test. The Product Chart that begins on page 41 lists a large selection, while the Interactive Buyer's Guide on Network World Fusion (www.nwfusion.com) contains more and lets you find the switch that's right for you based on criteria you select.

Confused about where to start? Turn to page 41 for a Checklist of factors to consider and buying advice.

REVIEW

The third-leading cause of global warming — that's how hot the 100Base-T switch market is today.

The best of these devices offers blazing throughput, sizzling management and flow- and traffic-control features. But a check of the prices of some Fast Ethernet switches can throw ice water on your enthusiasm pretty quickly, and others' ability to live up to their performance promise is only lukewarm. Only half of the 100Base-T switches we just tested could handle all the traffic users could reasonably deliver.

Among the best switches, Hewlett-Packard Co.'s AdvanceStack Switch 800T, Cisco Systems, Inc.'s Catalyst 5002 and FORE Systems, Inc.'s modular ES-3810 showed excellent performance with eight, 12 and 16 ports, respectively. However, Cisco's switch was considerably more expensive than the others. The two lowest ranked switches, 3Com Corp.'s SuperStack II Switch 3000 TX and Network Peripherals, Inc.'s (NPI) FE-1200, each lack support for 10/100 autosensing, and each failed to handle a full traffic load.

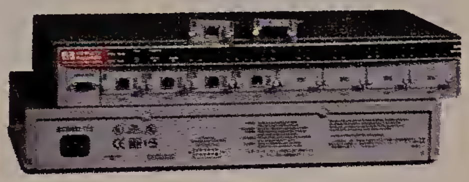
When evaluating switches, comparing price and throughput helps determine the value you get for your equipment dollar. The story "Not yet a commodity" (see page 39) highlights our pick for Best Buy among these products.

Selecting the test candidates

In this test, we compared 100Base-T switches with eight to 16 ports from vendors with the greatest share of the market. We wanted to avoid high-end, multislot switching systems, which typically support aggregate switching capacities in excess of 1G bit/sec, support multiple high-speed technologies besides 100Base-T and sport price tags starting at about $50,000.

In the eight- to 16-port range, 100Base-T switches tend to be stackable; many are of fixed configuration. More than half of the switches we tested in this round support no modular configuration options.

We specified that all ports had to support 100Base-T operation at 100-M bit/sec. As it turned out, all but two of the switches support 10/100 autosensing, in which the same RJ-45 port accepts a 10Base-T or 100Base-TX link, and can automatically adjust to whichever is plugged in — a big benefit to users migrating from Ethernet to Fast Ethernet. The accompanying Product Chart, which showcases stand-alone switches, doesn't include the modular Cisco and FORE switches we tested.


HP's AdvanceStack Switch 800T *earned both a Blue Ribbon and a Best Buy.*

Of the switches tested, only NPI's

ScoreCard

	Winner HP AdvanceStack Switch 800T	Winner Cisco Catalyst 5002	FORE ES-3810	NBase MegaSwitch II NH2012R	Cabletron FN100	Bay BayStack 350T	Compaq Netelligent 5708	3Com SuperStack II Switch 3000 TX	Network Peripherals FE-1200
Overall	8.1	8.1	8.0	7.0	6.4	6.3	6.0	6.2	5.3
Performance (40%)	10	9	10	8	6	10	7	6	5
Management and administration (20%)	7	8	7	6	6	3	6	6	5
Traffic and flow control (20%)	7	8	6	7	8	3	5	7	6
Configuration and connectivity (10%)	7	7	8	7	7	8	6	6	5
VLANs and other features (10%)	6	6	6	5	5	3	4	6	6

Scores based on a scale of 1-10. Percentages are the weight given each category in determining overall score.

100BASE-T SWITCHES SIDE-BY-SIDE

Switch	HP AdvanceStack Switch 800T	Cisco Catalyst 5002	FORE ES-3810	NBase MegaSwitch II NH2012R	Cabletron FN100	Bay BayStack 350T	Compaq Netelligent 5708	3Com SuperStack II Switch 3000 TX	Network Peripherals FE-1200
Configuration	Fixed/modular	2-slot modular	4-slot modular	Fixed/modular	Fixed	Fixed, stackable	Fixed	Fixed/modular	Fixed
No. of 100Base-T-capable ports	8	14	16	8	8	16	8	8	12
Type of ports	All are 10/100 autosensing or 100Base-FX	12 are 10/100 autosensing; 2 are 100Base-T only	All are 10/100 autosensing	All are 10/100 autosensing	All are 10/100 autosensing, plus one fiber/ST interface	All are 10/100 autosensing	All are 10/100 autosensing	All are fixed 100Base-T only	All are fixed 100Base-T only
Full duplex	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Other LAN technologies	100Base-FX (any port)	ATM; FDDI	100Base-FX; ATM	ATM; Gigabit Ethernet	One 100Base-FX port included	None	None	100Base-FX; ATM	None
Spanning Tree	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VLAN basis	Port groupings	Port groupings, MAC address	Ports, MAC addresses, other	Port groupings, MAC addresses	Port groupings	Port groupings	Port groupings	Port groupings, MAC addresses	Port groupings
Management access, PC management software (price)	Console; telnet; Win95/WinNT s/w (included)	Console; telnet; WinNT s/w ($2,495)	Console; telnet; WinNT s/w ($3,995)	Console; telnet; Win95 s/w ($495)	Console; no telnet; Win95/WinNT s/w ($2,995)	Console; telnet; not supported by Bay's Optivity	Console; telnet; Win95/WinNT s/w (included)	Console; telnet; Windows s/w (2 packages: $695 or $3,495)	Console; no telnet; Win3.X/WinNT/Win95 s/w ($695)
Port mirroring	Yes	Yes	Yes	Yes	No	No	No	No	Yes
Traffic/flow control features	Yes; several	Yes; several	Limited	Yes; several	Yes; several	None	Yes; several	Yes; several	Yes; several
Filtering	Yes	Limited	Limited	Yes	Yes	None	None	Limited	Yes
No. of full streams delivered, in/out	4 in/4 out	6 in/6 out	8 in/8 out	4 in/4 out	4 in/4 out	8 in/8 out	4 in/4 out	4 in/4 out	6 in/6 out
Throughput	595,000 packet/sec	815,000 packet/sec	1,156,000 packet/sec	581,200 packet/sec	476,000 packet/sec	1,189,664 packet/sec	583,000 packet/sec	434,500 packet/sec	534,000 packet/sec
% of maximum load successfully switched	100%	92%	100%	97%	80%	100%	100%	78%	64%
Head of line blocking	None detected	None detected	None detected	Yes	Yes	None detected	Yes	None detected	Yes
Effect of heavy traffic load on management	Slight delay in retrieving data	Very slight inaccuracy	None detected	Slight inaccuracy	Some inaccuracy	None detected	Severe; could not retrieve data sometimes	Severe; could not retrieve data sometimes	None detected

Don't miss our 100Base-T switch coverage on Network World Fusion, where you'll find the Interactive Buyer's Guide and additional product listings plus details on how we tested the products we reviewed.

FIND IT ON FUSION 3312

FE-1200 and 3Com's SuperStack II Switch 3000 TX supported only 100Base-T ports at the full 100M bit/sec, though 3Com is reportedly shipping a newer model of its 3000 that provides 12 10/100 autosensing ports. However, the same switching fabric is used as in the eight-port model we tested, according to 3Com. Therefore, we'd expect the new model's performance to be the same as the lackluster performance we measured for the eight-port model.

Keep in mind that in designing switched networks, there are places where switches of differing port capacities are appropriate. For example, two eight-port switches don't necessarily equate to one 16-port switch; with two there's a bigger bottleneck when packets must travel between ports on different switches.

We expected the 100Base-T switches we tested to be able to accept maximum- or near maximum-rate packet streams on half of their ports and switch the packets in these streams to the other half of their ports. We expected an eight-port switch to be able to accept up to four input streams, each up to 148,000 packet/sec (an aggregate load of nearly 600,000 packet/sec) and be able to switch this load to its four other output ports.

For a 12-port switch, we delivered up to six input streams, a total of nearly 900,000 packet/sec, destined for the switch's other six output ports. And for a 16-port switch, we delivered up to eight streams, a load of nearly 1.2M packet/sec.

With our 64-byte packets, these loads equate to more than 300M bit/sec of throughput for four streams and slightly more than 600M bit/sec for eight streams.

These capacities would far overload even the largest routers today, which typically can handle no more than a few hundred thousand packets per second. This is one of the main reasons that switching has become such a popular alternative to routing.

Hewlett-Packard: A winner

HP's AdvanceStack Switch 800T is hot. The eight-port switch handled 100% of the throughput load we threw at it and exhibited no head-of-line blocking or other performance problems.

This switch is rich in features; it has port mirroring and the capability to trunk as many as four 100Base-T links between switches.

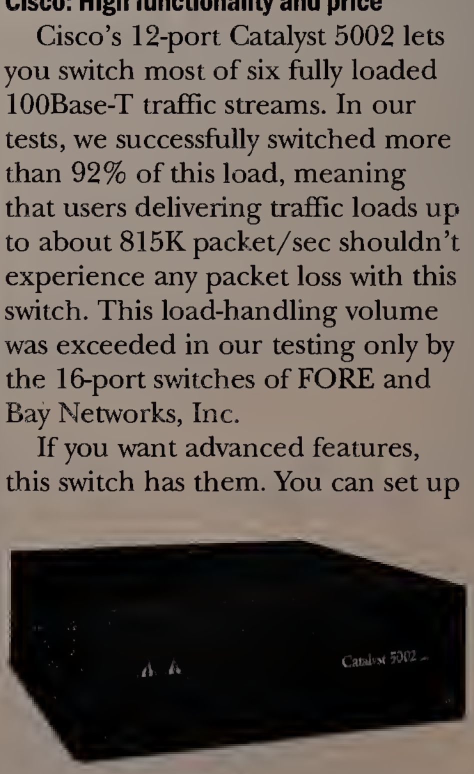
With port mirroring, traffic on one port can be copied to another for external monitoring and analysis. There's an impressive set of traffic control features, including automatic broadcast control and some features for reducing broadcast volume at the network layer.

The vendor's useful and easy-to-use Windows-based management software is included with the switch. We found its drag-and-drop virtual LAN setup and on-screen help to be superb.

Cisco: High functionality and price

Cisco's 12-port Catalyst 5002 lets you switch most of six fully loaded 100Base-T traffic streams. In our tests, we successfully switched more than 92% of this load, meaning that users delivering traffic loads up to about 815K packet/sec shouldn't experience any packet loss with this switch. This load-handling volume was exceeded in our testing only by the 16-port switches of FORE and Bay Networks, Inc.

If you want advanced features, this switch has them. You can set up



Cisco's Catalyst 5002 *is peppy but pricey.*

to four trunk links between switches. If set to full-duplex, this feature provides up to 800M bit/sec of bidirectional bandwidth between switches.

Various flow- and traffic-control features include the ability to set, on a per-port basis, the number of packets per second of broadcasts that are allowed to pass. You also can set a threshold for any port on the percentage of total traffic that broadcasts make up. After the threshold is reached, subsequent broadcasts are discarded.

The Catalyst 5002 supports port mirroring and includes a slick set of management wares in the form of CiscoWorks for Switched Internetworks. It offers additional features such as the ability to limit traffic on a particular port to only packets with a designated station's media access control (MAC) address, which some users might employ for increased security.

The bad news, though, is price. Configured as tested, the switch costs $18,285. At more than $1,300 per port, the Catalyst 5002 is unrealistically overpriced, in our view.

Not yet a commodity

It may be a little early to say that 100Base-T switches have reached the same commodity status in the marketplace as Ethernet switches, but that day is coming soon.

With the exception of Cisco Systems, Inc. and Cabletron Systems, Inc., all the 100Base-T switches we tested bear price tags of less than $1,000 per port. In fact, except for FORE Systems, Inc.'s ES-3810, priced at $687 per port, all the rest come in at or below $500 per port. By comparison, many Ethernet switches are now priced at or below $100 per port.

Generally, 100Base-T switching, if priced from $250 to $500 per port, provides 10 times the network capacity, speed and bandwidth of switched Ethernet at only 2 1/2 to 5 times switched Ethernet prices.

Note that we calculated price per port as the total price of the switch hardware divided by the number of ports. This fails to factor in the inclusion or quality of a vendor's management applications or the fact that a modular-chassis switch is inherently more expensive than one with a fixed configuration. But these costs are impossible to separate out.

When you factor in performance, you get a measure of each switch's value. In the table below, the last column shows that, on a pure performance-per-dollar basis, Bay Networks, Inc.'s BayStack 350T delivers the most for your money, while high-priced Cisco and Cabletron switches are laggards.

While the numbers on Bay's and Compaq Computer Corp.'s switches are good, their management deficiencies and traffic problems, respectively, prevent us from giving them our top value recommendation. Instead, thanks to its high throughput, reasonable price per port and outstanding features, we're naming HP's AdvanceStack 800T a Best Buy.

PRICE PER PORT, SWITCHING THROUGHPUT PER DOLLAR

Switch	Price per 100Base-T port	Packet/sec per $
HP AdvanceStack Switch 800T	$500 BEST BUY	149
Cisco Catalyst 5002	$1,306	45
FORE ES-3810	$687	105
NBase MegaSwitch II NH2012R	$437	166
Cabletron FN100	$1,050	57
Bay BayStack 350T	$250	298
Compaq Netelligent 5708	$299	244
3Com SuperStack II Switch 3000 TX	$374	145
Network Peripherals FE-1200	$291	153

FORE ES-3810: *has high throughput in a modular box.*

FORE: High performance

FORE doesn't do just ATM anymore. With the ES-3810, FORE offers a high-performance 100-Base-T switch, too. This was one of the more modular switches we looked at; the configuration we tested had 16 100Base-T ports in four slots.

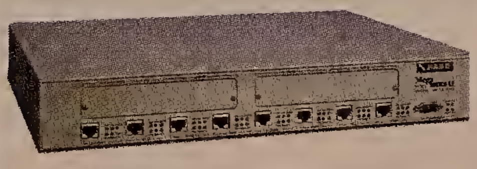
Throughput was stellar. Not a packet was lost of the nearly 1.2 million packet/sec we delivered via eight concurrent packet streams. We saw no performance problems.

FORE offers a good range of features, including a couple of configurable broadcast and multicast control parameters. The switch supports VLANs, but only those designed to run over an ATM backbone. And ATM is how the vendor would like its customers to handle high-speed switch-to-switch links, as well; there's no provision for running multiple 100Base-T links between switches.

At the time we tested FORE's 100Base-T switch, the product wasn't fully integrated in the shipping version of the vendor's FOREView management software. Rather, complicated software patches and downloads were required, and this was a hassle. Complete integration with the NT version of FOREView won't be available until the next release, due in October.

NBase: Good all-around performance

NBase Communications addresses switch-to-switch bottlenecks via its own prestandard Gigabit Ethernet module. But so as not to paint itself into a corner, the vendor also supports a modular ATM uplink in its NH2012R, which has two slots for plug-in options.



NBase MegaSwitch II NH2012R *supports Gigabit Ethernet uplinks.*

For flow control, the switch uses a fairly unsophisticated technique we call jamming to prevent too many packets from inundating the switch. The carrier signal of Fast-Ethernet's carrier-sense multiple access with collision detection (CSMA/CD) is temporarily raised on a per-port basis whenever the switch concludes that, without applying some jamming, the probability of an overload — and lost packets — is at hand.

The sender, upon sensing the carrier, is compelled to back off for a pseudo-random period of time before again attempting to transmit. This gives the switch a chance to clear out its buffers. We noted that with flow control off, the eight-port switch could handle about 97% of the full load we delivered to it via four input packet streams. Unfortunately, we also noted some head-of-line blocking with this switch.

We found NBase has a particularly extensive MAC-based filtering capability in this switch, one of the few we tested that offered this.

The switch falls squarely in the middle of the pack considering features, throughput, management and price.

Cabletron: Limited throughput

One of the eight ports on Cabletron System, Inc.'s FN100 offers a fiber and an unshielded twisted-pair (UTP) connector, so if you need the distance of a 100Base-FX fiber link, it's already there. (The port can operate over the UTP or the fiber interface, but not both.)

Cabletron FN100 *is more expensive than comparable boxes.*

The FN100 cannot interact with Cabletron's high-end MMAC-Plus switching hubs using the features of the vendor's sophisticated SecureFast architecture. But the FN100 does include some sophisticated features on its own, including the ability to support as many as eight concurrently active 100Base-T links between switches. This feature, providing up to 800M bit/sec of bandwidth, can help to avoid switch-to-switch bottlenecks.

There's also some pretty fancy flow control, in which the user can set broadcast-limiting thresholds on a per-port basis.

We found some throughput limitations with the FN100, however. We couldn't attain more than about 80% load via four concurrent traffic streams. And we also found indications of head-of-line blocking.

NetResults

Switch	HP AdvanceStack Switch 800T	Cisco Catalyst 5002	FORE ES-3810	NBase MegaSwitch II NH2012R	Cabletron FN100	Bay BayStack 350T	Compaq Netelligent 5708	3Com SuperStack II Switch 3000 TX	Network Peripherals FE-1200
Price as tested	$3,995	$18,285	$10,990	$3,495	$8,400	$3,995	$2,392	$2,995	$3,495
No. of 100Base-T ports	8	14	16	8	8	16	8	8	12
Pros									
	▲ Excellent throughput ▲ Broadcast control features ▲ Multilink switch-to-switch trunking ▲ Good value; per-port filters	▲ Good throughput ▲ Broadcast control features ▲ Multilink switch-to-switch trunking ▲ Excellent management	▲ Excellent throughput ▲ Integrates ATM and 100Base-T well	▲ Good throughput ▲ Gigabit Ethernet option ▲ Flow control over full-duplex links ▲ Filtering	▲ Multilink switch-to-switch trunking ▲ Good broadcast and traffic control	▲ Excellent throughput	▲ Excellent throughput ▲ Good value	▲ Broadcast control features ▲ Very good management	▲ Configurable per-port filters ▲ Special switch-to-switch trunking
Cons									
	▼ No significant cons	▼ Overpriced	▼ Overpriced ▼ Management software is unwieldy	▼ Head-of-line blocking observed	▼ Head-of-line blocking observed ▼ Overpriced	▼ Console-only management (no Windows management software) ▼ Not yet supported by Optivity	▼ Head-of-line blocking observed ▼ Basic features only (few advanced features)	▼ Disappointing throughput ▼ Ports are fixed 100Base-T (no 10/100)	▼ Head-of-line blocking observed ▼ Disappointing throughput ▼ Ports are fixed 100Base-T (no 10/100)

Bay Stack 350T *showed top throughput.*

Bay: Top performance, light on features

Bay's 16-port BayStack 350T won't be supported by the vendor's Optivity management software until a future major release of Optivity. Every switch configuration, including VLAN setup, had to be done via the console command line. This made the switch's administration and management clearly deficient.

The good news is that the BayStack 350T tied with FORE's ES-3810 for the most overall throughput of all the switches we tested. The unit handled, and appropriately switched, every packet within the eight concurrent streams of high-volume traffic we delivered to it — nearly 1.2 million packet/sec.

While definitely high performance, the 350T lacks much of the more sophisticated features that many competitors' 100Base-T switches now include as standard. The 350T supports port-based VLANs, the Spanning Tree Protocol and similar basic switch capabilities. But there are no special traffic control features, and there is no multiple switch-to-switch link capability, so a single full-duplex 100Base-T link is the most you can carry between switches. Also, there's no port mirroring.

Compaq: Good basic switch

With its acquisition of NetWorth, Compaq Computer Corp. wants to show it does more than just Intel-based servers. Here it delivers an eight-port switch with great throughput — it handled 100% of the four traffic streams we threw at it.

We walked away from Compaq's switch with a couple of performance concerns, however. We found that a heavy load can essentially shut down SNMP management access to the switch. Also, we found indications of head-of-line blocking.

Compaq Netelligent 5708 *was the least expensive switch we tested.*

The switch's feature set is pretty basic. Flow control is based on the same jamming technique we saw in NBase's switch. There's no special trunking to allow more than a single 100Base-T link between switches and no port mirroring.

Management is fairly easy with the Windows-based Intelligent Management Software application.

3Com: Lowest total throughput

3Com's SuperStack II Switch 3000 TX had the lowest total throughput of all the switches we tested. The 434,000 packet/sec throughput we measured represents about 78% of the four traffic streams we delivered to the switch. Though NPI's FE-1200 was able to forward a lower percentage of traffic, with 12 ports it had a higher total number of packets per second.

3Com SuperStack II Switch 300 TX *lacked horsepower.*

We saw no evidence of head-of-line blocking, but we did observe insufficient horsepower to handle management queries under a heavy traffic load.

Still, the 3000 offers an impressive array of traffic-control features, in-cluding various per-port parameters for limiting broadcasts and multicasts. But this model of the switch supports just 100Base-T links — not the 10/100 autosensing that all but one of the other switches supports. This switch also does not have port mirroring.

NPI: Out of steam

The NPI FE-1200 is the other switch we looked at that doesn't have 10/100 autosensing. And even though it had 12 100Base-T ports, the throughput we measured seemed more appropriate for a switch with fewer ports. Indeed, we estimate that the switch successfully handled only about 64% of the full load we delivered to it via six 100Base-T streams. And low throughput wasn't the only traffic problem we found — we also noted indications of head-of-line blocking.

The NPI switch has a fairly full set of features, though. For example, you can aggregate as many as four ports as "power links" for switch-to-switch connections. Port mirroring is there, as well as the ability to set up to 32 MAC-based filters per port. There's also a built-in broadcast/multicast-limiting feature, which constrains broadcast or multicast packets to no more than 10% of a port's throughput.

If you're willing to sacrifice on throughput, would settle for 100Base-T-only ports and are not looking for expandable support for other technology uplinks such as ATM or Gigabit Ethernet, this switch is an affordable alternative.

NPI FE-1200; *coudn't handle a full traffic load.*

Mier is president of Mier Communications, Inc., a network consultancy and product test center based in Princeton Junction, N.J. He also is an editor of "The Switch Book," a comprehensive special report on LAN switches, which is published annually by Mier Communications (see www.mier.com/books.html). Smithers is manager of lab testing and Scavo is a systems integrator at Mier Communications. They can be reached at (609) 275-7311 or via e-mail to ed@mier.com, rob@mier.com or tom@mier.com.

Switch shopping: How to find the one that's right for you

by Edwin E. Mier

ISSUES AND TRENDS

Many users have already found that a little switching, in just the right places, can help a network run better. But will a lot of switching, deployed in every wiring closet, necessarily help the same network run a lot better?

According to market projections, most large user organizations will be spending a lot of money to find out. As a technology, switching has put older, shared-bandwidth hubs and repeaters out to pasture.

Switched Ethernet has proven itself. User attention is now focusing on the next echelon of higher capacity switches — being deployed in backbones, at least for now — which can switch multiple 100M bit/sec, even gigabit, datastreams.

There are several key areas, many of which are covered in the chart (beginning below), that you need to consider before you go switch shopping to make sure you bring home the right switch for your network. Key areas include:

1. Configuration options. These are as broad and diverse as the price range for 100Base-T switches. Do your switches need to support and interconnect just Ethernet and Fast Ethernet?

Most are now able to handle both of these with equal facility. Or do you also need to connect to an ATM, FDDI or Gigabit Ethernet network?

2. Throughput and performance. Most switches in this class offer ports that automatically sense between 10M Ethernet and 100M bit/sec Fast Ethernet. But can the same switch handle all ports at full 100M bit/sec port speed? An eight-port 10/100 switch could potentially receive, and need to switch, nearly 600,000 packet/sec. That's more than 300M bit/sec of data traffic. And this presumes all packets are unicast — addressed to a single destination. Broadcast packets add to the burden because each one has to be replicated by the switch and sent out onto each outbound port.

3. Switch-to-switch connectivity. Even at 100M bit/sec, your switch-to-switch 100Base-T links can easily become bottlenecks, not to mention single points of failure. Most switch vendors support full-duplex operation, in which an unshielded twisted-pair link can be set to handle up to 100M bit/sec in each direction. Some support multiple parallel switch-to-switch links, automatic switchover to a redundant link, even load balancing, which can ameliorate these concerns.

See **Switches,** *page 53*

PRODUCT CHART: 100BASE-T SWITCHES

Company	Product	No. of 100Base-T ports	Maximum no. of high-speed uplinks				Performance			Management				Features				Price	Warranty
		Minimum-maximum	155M bit/sec ATM	622M bit/sec ATM	FDDI	Gigabit Ethernet	Aggregate switched backplance capacity (in bit/sec)	Maximum forwarding rate of 64-byte packets (in packet/sec)	Latency for 64-byte packets (in microseconds)	Broadcast traffic control	Number of MAC addresses supported	RMDN groups supported	Other	Supports Layer 3 switching	Supports autosensing	Maximum number of VLANs supported	Other	Minimum-maximum per device	In months
Acacia Networks, Inc. (888) 422-224 www.acacianet.com	NovaSwitch 12000 LX 3.0	6-12	3		3	1	9G	5M	17		5,118	1-4	Built-in Web server		●	32	TruStak stacking architecture; DSP-based upgradable switching engine	$2,395-$4,195	36
Accton Technology Corp. (408) 452-8900 www.accton.com	Fast SwitchHub-8mi SNMP 1.85	8					800M	148.8K	9.5-14.7		4,000		Spanning Tree		●	8	Adaptive cut-through, back-pressure flow control	$2,200	No limit
Alcatel Data Networks, Inc. (703) 724-2000 www.adn.alcatel.com	1100 LSS Model 210	1-16	2	1	2		960M	87K	30-75	●	9,216	1-9		●	●	32	Policy-based VLANs with IP firewall	$4,995-$9,500	12
Allied Telesyn International Corp. (800) 424-4284 www.alliedtelesyn.com	AT-8200	8-16	1				1.6G	148K	17	●	8,192	1-9		●	●	16		$9,995-$12,785	12
Alteon Networks, Inc. (888) 258-3661 www.alteon.com	AceSwitch 110	8	1		1	2	2.5G	NA	15	●	4,000	1-4	Web-based management		●	64	Autonegotiation, 802.3x, 802.1p/q, jumbo frames, dual-homing, class of service	$2,000-$8,995	12
Asanté Technologies, Inc. (800) 566-6680 www.asante.com	IntraStack 1.0	12-14					2G	148K	Not specify	●	8,000	1	Integrated Web management server		●		Stackable to 46 ports, fiber expansion units, MII uplink card slots	$4,750-$8,799	36
Bay Networks, Inc (800) 822-9638 www.baynetworks.com	**BayStack 350 Autosense Switch**	12					1.2G	1.6M	10	●	8,192	1-4			●	8		$3,995-$4,995	12
Cabletron Systems, Inc. (603) 332-9400 www.cabletron.com	**FN100**	8-16					2.56G	1.2M	15	●	8,192					64	Autonegotiation, port trunking to aggregate bandwidth to backbone connections	$16,800-$24,115	3
CNetUSA Technology, Inc. (408) 934-0800 www.cnetusa.com	CNSH-600	6					1G	14.8K	70		8,000				●			$2,328	60
Compaq Computer Corp. (800) 544-5255 www.compaq.com	Netelligent 5708 Dual-Speed Ethernet Switch	8					1.6G	14.8K	20	●	4,196		Netelligent management software included		●	8	Cross-bar matrix architecture, LED performance monitor	$2,392	36

Products highlighted in color were tested. • Blue Ribbon winner. • Editor's Note: Each vendor was limited to one product. Look on Fusion for a more expansive list of 100Base-T switches.

CHART COMPILED BY KATHY SCOTT

Footnotes: (1) 1 port, plus 1 redundant port

DSP = Digital signal processor
NA = Not applicable
EEPROM = Electronically Erasable Programmable Read-Only Memory
NMS = Network Management system
ISL= Interswitch Link
SMON = Switched Monitoring
MII = Media Independent Interface

PRODUCT CHART: 100BASE-T SWITCHES

Company	Product	No. of 100Base-T ports	Maximum no. of high-speed uplinks				Performance			Management				Features				Price	Warranty
		Minimum-maximum	155M bit/sec ATM	622M bit/sec ATM	FDDI	Gigabit Ethernet	Aggregate switched backplane capacity (In bit/sec)	Maximum forwarding rate of 64-byte packets (In packet/sec)	Latency for 64-byte packets (In microseconds)	Broadcast traffic control	Number of MAC addresses supported	RMON groups supported	Other	Supports Layer 3 switching	Supports autosensing	Maximum number of VLANs supported	Other	Minimum-maximum per device	In months
D-Link Systems, Inc. (714) 455-1688 www.dlink.com	DES-1008	8					1.26G	148K	15		8,192				●			$1,995	No limit
Digital Equipment Corp. (800) 859-1758 www.networks.digital.com	MultiSwitch 300	8-12					1.2G	1.1M	Not specify	●	4,096	1-3, 9			●	12		$5,495-$10,485	12
Extreme Networks, Inc. (408) 342-0999 www.extremenetworks.com	Summit2	16				2	8.5G	5.8M	3-6	●	128,000	1-4	SNMP, command-line interface and Web server-based mgmt.	●	●	4,096	Policy-based bandwidth management scheme	$14,995	12
Foundry Networks, Inc. (408) 731-3800 www.foundrynet.com	FastIron Multilayer Switch	16-18				2	4G	7M	<10	●	16,000	1-4		●	●	1,024		$7,995-$17,995	12
Hewlett-Packard Co. (800) 533-1333 www.hp.com/go/network_city	AdvanceStack 800T	4-8					1G	1.191M	3	●	10,000	1-4	IP Multicast control, EASE Traffic Monitoring	●	●	8	Port trunking; port mirroring	$3,999-$7,791	36
Hitachi Internetworking (888) 484-4773 www.internetworking.hitachi.com	HiSpeed (HS)150-100	8-16	1		1		1.6G	1.7M	9	●	8,192	1-9	SNMP, telnet console port, optional HiView management application	●	●	16		$7,795-$12,785	12
Intel Corp. (503) 696-8080 www.intel.com	Express 10/100 Fast Ethernet Switch	8-12					1.024M	148.8K	8	●	4,096	1-3, 9	Web-based management application	●	●	64	Port mirroring	$2,995-$6,965	12
KTI Networks, Inc. (800) 275-6387 www.ktinet.com	KS2870	7-8					1.6G	14.8K	1.5		16,384				●		One expansion slot for a 10M/100M or a 100Base-FX module	$1,565-$1,875	12
Lantronix, Inc. (800) 422-7055 www.lantronix.com	LSW8F	8					1G	148.8K	28		8,192				●			$1,595	60
Madge Networks, Inc. (800) 876-2343 www. madge.com	Visage 800T	8	(1)				4G	148K	6	●	32,000	1-7	SMON			256	Congestion management	$4,495	12
Matrox Electronic Systems, Ltd. (800) 837-3611 www.matrox.com	Matrox SwitchBox-6	6					1G	148K	8.8-14		8,192	1-9	SNMP accessible via Guardian and WebPatrol management software		●		Optional fiber-optic port available	$1,999-$2,199	36
NBase Communications, Inc. (818) 773-0900 www.nbase.com	MegaSwitch II - NH 2012	8-24	2		2	2	500M	730K	6	●	4,000	1-4			●	64	Redundant power and flow control	$3,300-$4,500	12
Network Peripherals, Inc. (800) 674-8855 www.npix.com	FE-1200	12					2G	1.78M	12.2-16.7	●	4,096/ port		SNMP, RS232 Console		●	12	Power links connecting two switches at up to 800M bit/sec	$2,795	36
Newbridge Networks, Inc. (703) 834-3600 www.vivid.newbridge.com	VIVID GeoRim/FE	8-12	1			1	1.2G	740K	30-60	●	2,048	1-3, 9	VIVID NetDirector support, full SNMP		●	4	Auto flow control, full and half duplex on all 10/100 ports, 100Base-FX fiber support, roving port, Spanning Tree, upgradable flash ROM	$6,195-$9,995	12
Osicom Technologies, Inc. (888) 674-2668 www.osicom.com	OS-5208	2					1.2G	148K	5.2-6		8,192				●		Autonegotiation	$1,295	12
Plaintree Systems, Inc. (800) 370-2724 www.plaintree.com	WaveSwitch 4008/4016 Version 1.0	8-16					1.6G	2.4M	20	●	8,192	1-3, 9	Port mirroring	●	●	16	Available with 8, 100Base-FX ports	$5,495 - $6,995	12
Standard Microsystems Corp. (516) 435-6000 www.smc.com	TigerSwitch 100	8					1.8G	148.8K	<20		4,096						Autonegotiation	$2,880	36
Sun Microsystems, Inc. (800) 786-0404 www.sun.com	SunSwitch	8				2	2.5G	148.8K	20-40	●	4,096	1-3, 9	Java-based NMS			64	CPU offered, jumbo frame support	$9,995	3
SVEC Computer Corp. (800) 756-7832 www.svec.com	FD1315	1					140M	30K	18-30	●	4,000		Spanning Tree			5	Field-upgradable EEPROM	$995	60
3Com Corp. (800) 638-3266 www.3com.com	SuperStack II Switch 3000 TX	8-12	1				800M	500K	8	●	4,080	1-7	SNMP, MIB, RMON MIB			16		$2,995-$5,990	12

Products highlighted in color were tested. • Blue Ribbon winner. • **Editor's Note: Each vendor was limited to one product. Look on Fusion for a more expansive list of 100Base-T switches.**

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Management Strategies

How to conduct a review

Make the performance appraisal an ongoing process to spur the professional growth of your employees.

By George Hulme

Performance reviews are a lot like dental appointments: Few people look forward to them and hope to get the unpleasant task over with as quickly as possible. But just like flossing, employee appraisals should be done on a regular basis to attain the maximum benefits.

Although appraisals are used for everything from gauging employee productivity and granting raises to establishing the groundwork for termination, managers often misunderstand and neglect them.

Human resources consultants say the most common blunder is viewing performance reviews as something to be done once or twice a year instead of as a continuous process.

"This is a huge mistake because when done correctly, it can really empower the employee and manager," says David Whitney, president and CEO of performance management software vendor Austin-Hayne Corp., in San Mateo, Calif.

Deb Haggerty, a national human resources speaker and consultant from York, Pa., says, "You can't view the appraisal as just a form to be filled out once a year. If you do, you're not going to get the most out of your people, and they won't grow professionally." What's more, this mindset detracts from your role as a coach and mentor, adds Allen Jaramillo of Jaramillo Associates, a human resources consultancy in Aurora, Colo.

COMMON EMPLOYEE COMPLAINTS ABOUT REVIEWS

- Manager hasn't gathered adequate performance information.
- Standards by which employees are judged are unclear.
- Manager rushes through the review or doesn't take it seriously.
- Manager isn't honest.
- Employees don't receive rewards for excellent performance.
- Not enough attention is devoted to employee development.

Check out Fusion for more information on employee appraisals.

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Jaramillo says short mini appraisals held at preestablished intervals can keep employees and managers on track and help avoid surprises during the final annual review.

"You have to consider the level of the employee when establishing review intervals. If you're appraising a new hire, it may be important to sit down every six weeks, while twice a year will do for someone who has been in the position for a while," he advises.

Unfortunately, this kind of long-term, proactive approach isn't too common. "The typical pattern is that managers remember what happened over the past few weeks plus the big screw-up six months before. This is exactly what you want to avoid," says David Berry, director of client services at the MA&A Group, an Atlanta-based information management and placement firm.

When managers think of appraisals as an ongoing process, they become far less intimidated by the task of evaluating their workers, Haggerty says.

Deb Haggerty *advises clients to think of reviews as an ongoing process.*

This approach also shifts the formal review's focus to important issues such as the employee's career goals, corporate goals and objectives to achieve, says Norman Wu, president of Avantos Performance Systems, Inc., an employee appraisal software developer in Emeryville, Calif. But don't get too carried away. Wu says technical managers tend to overquantify the form and the process. "They make them too complicated. You want to keep the process as simple as possible," he advises. Berry recalls the appraisal forms EDS Corp. used before the forms were simplified and revamped. "The document was 20 pages long, and each page had five or six different attributes of a performance dimension," he says. "Then for each dimension, you were to write down your comments and go through and choose descriptions that ranged from the very positive to the very negative. If you had a whole bunch of direct reports, it would just kill you."

Another reason technical managers may want to fast-forward reviews is they may not have focused on the process during college or as an employee.

"It is fairly typical in technical organizations that most managers are not promoted for their ability to manage people as they are for their core technical competency," says Bob Wheeler, assistant vice chancellor of the University of Arkansas for Medical Science. Wheeler's department was growing by 100 employees per month, and he needed to get a handle on the appraisal process. He chose Avantos' AMS/3 to help his managers produce higher quality reviews and better control the process.

"Something we found helpful with the software was the advisory help. Managers can a type a related question and get answers without spending a lot of time on the phone with human resources," Wheeler says.

Software also could prove useful in designing the appraisal form that managers use to gauge progress. For instance, Austin-Hayne's Employee Appraiser 3.0 performance management software contains appraisal forms developed by working HR managers. "Our templates weren't just developed in some office somewhere. We studied what good managers were doing right and integrated that into our package," says Whitney of Austin-Hayne.

Sears, Roebuck & Co. uses Employee Appraiser to give managers the vocabulary and ideas to get started and then tailor the criteria to their specific project or department, says Nancy Nusser, a senior project manager at Sears in Hoffman Estates, Ill.

The retailer also changed its reviews from an annual to a semiannual schedule, and managers and employees are pleased with the results.

"Focus groups and action planning teams discovered that associates wanted to know where they stood in the middle of the year; they didn't want to wait until the end of the year when it was too late to do anything about it," Nusser says. "People like being able to talk to their manager and clarify things so they can move on with the year."

Nusser notes the importance of communication during the review process. She advises managers to give their reports the opportunity to discuss a self-assessment and incorporate this into the appraisal.

She says Employee Appraiser sofware's coaching feature has been useful because it offers tips for improvement.

RULES FOR EFFECTIVE APPRAISALS

- View the appraisal as a process, not an event.
- Continuously document employee performance.
- Be careful to appraise behavior, not personality.
- Nothing should come as a surprise to the employee.
- Outline a plan for employee development or improvement.
- Perform a self-appraisal and think about how you can improve the process.

How do you know if you're following a successful appraisal process? One litmus test is there shouldn't be any surprises during the face-to-face appraisal.

When everyone's on the same page before the ap-praisal begins, the employee shouldn't be shocked by a poor or flattering evaluation.

"One of the best indicators is when you get feedback from the employees that the reviews are fair and reasonable and they are onboard with what you are trying to do. If you build that kind of atmosphere, you're on the right track," Wheeler says.

Hulme is a freelance writer in Croydon, Pa. He can be contacted at geohulme@reporters.net.

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Applications are also invited for a post of software **Engineer** to support the above and similar networking prototyping projects. A degree is required and at least two years experience in networking using Internet technology in Unix and Windows NT environments. Experience with network security mechanisms is desirable. **(Ref No. A2-CSD- 1146).**

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NATO C3 Agency
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NATO C3 AGENCY

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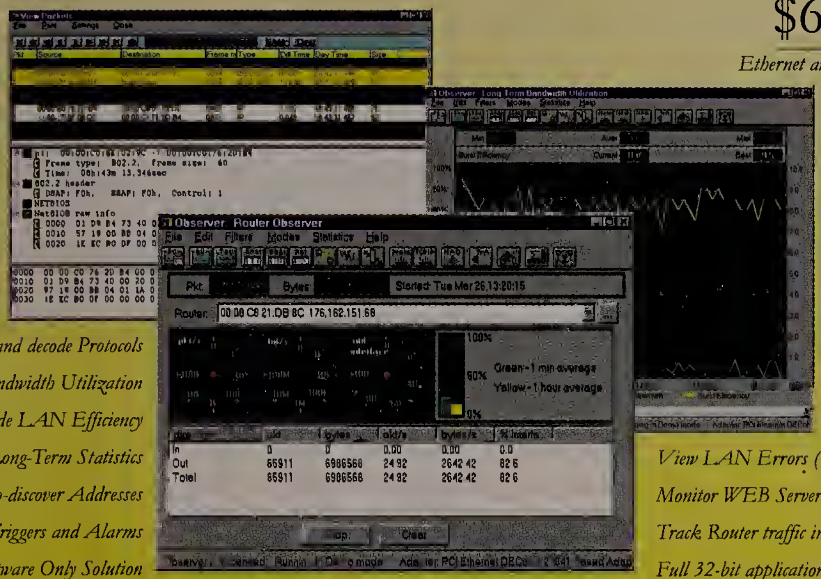
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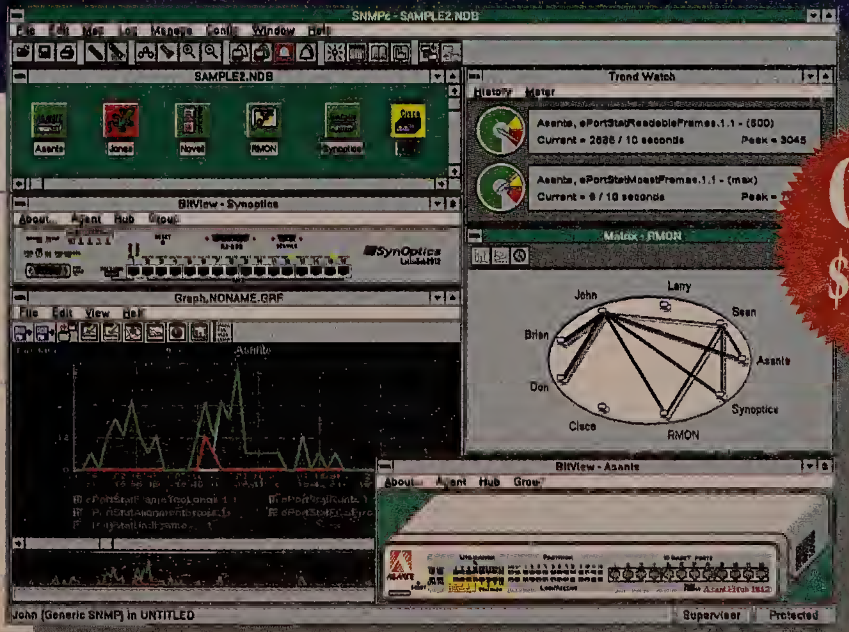
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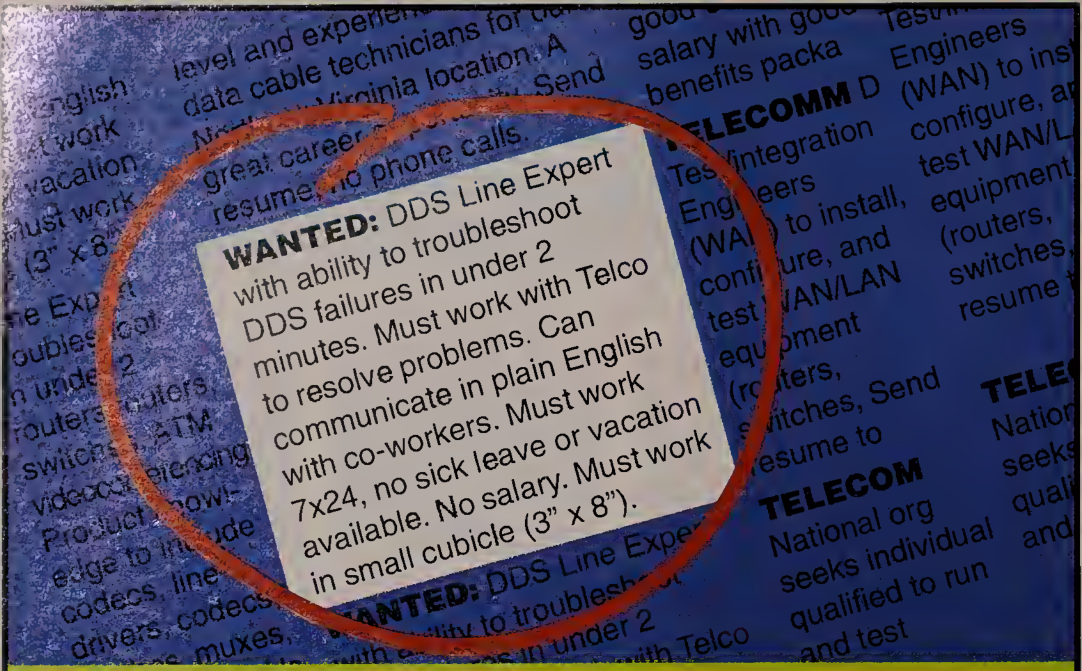

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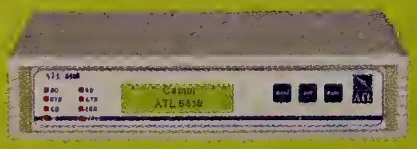

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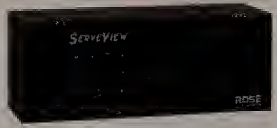

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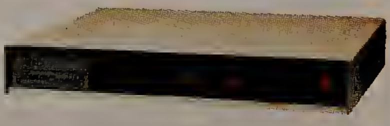

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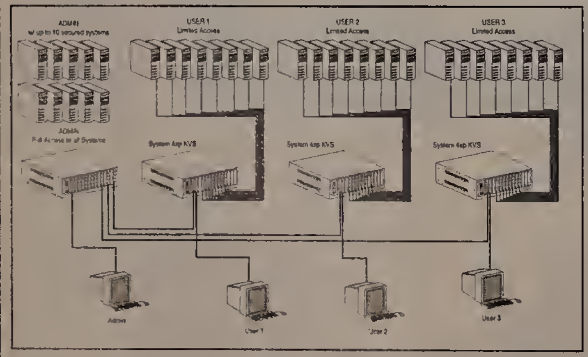

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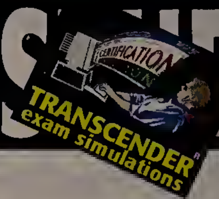

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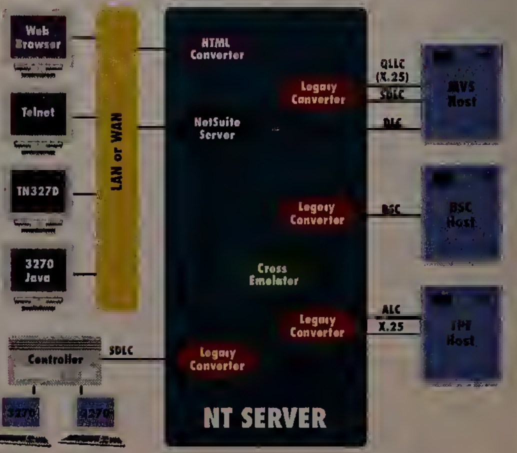

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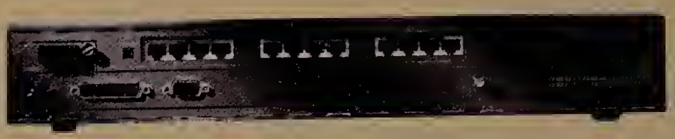

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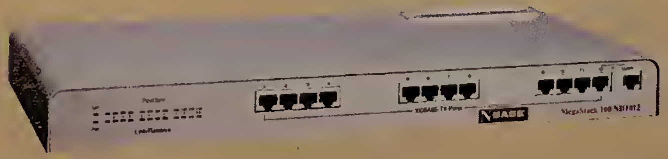

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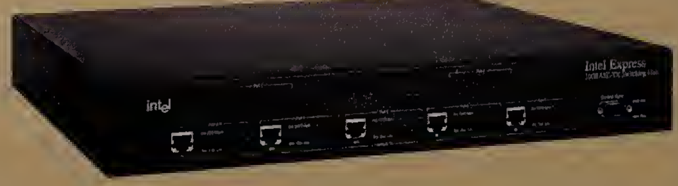

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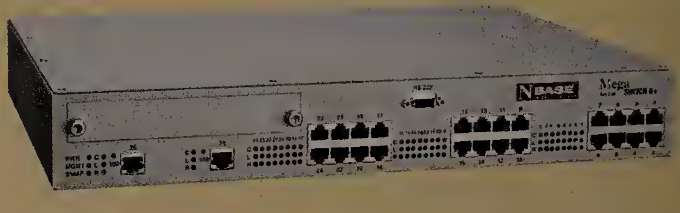

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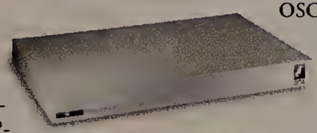

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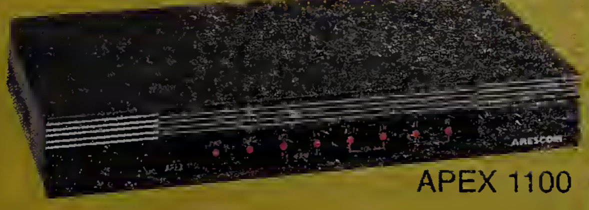

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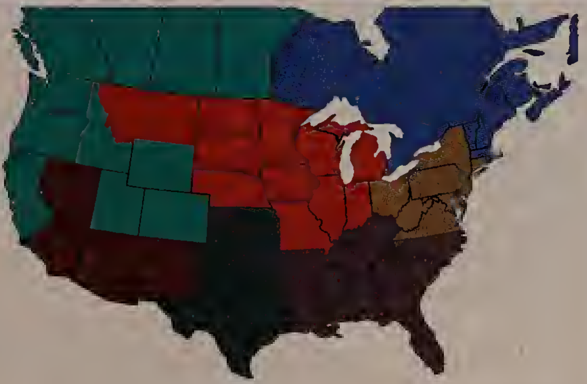

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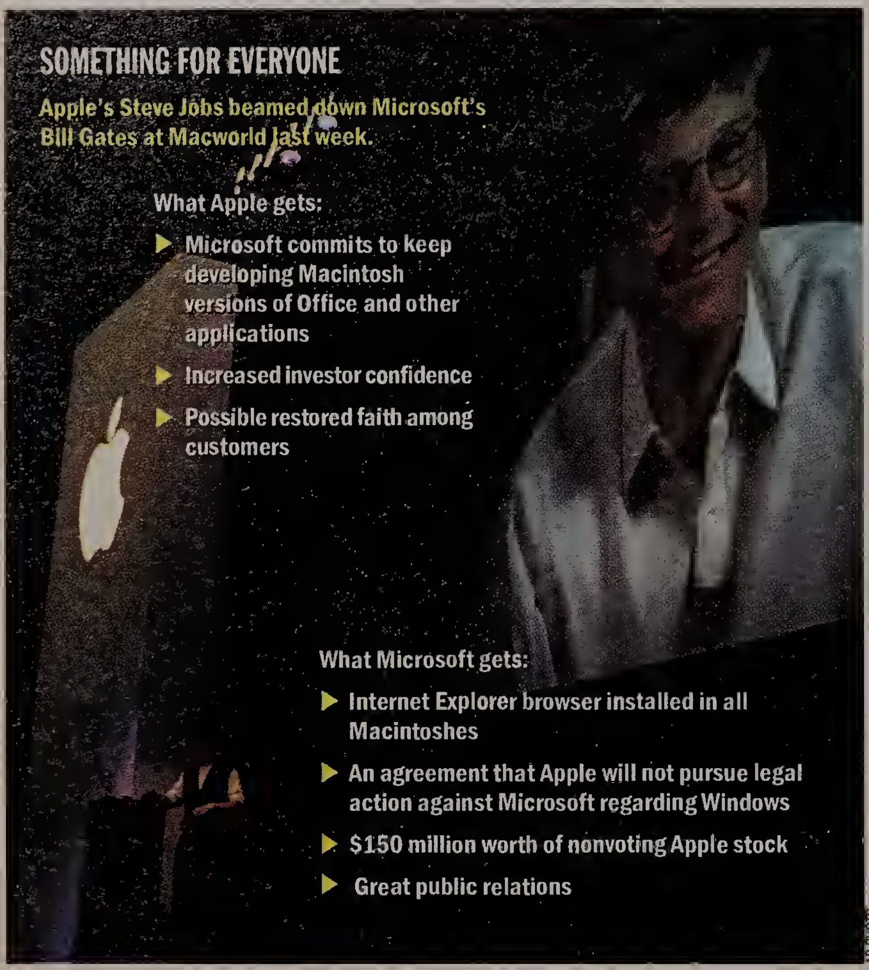
Apple

Continued from page 1

and Oracle Corp. Chairman Larry Ellison, who has joined Apple's board of directors. Despite their vast differences, the men share a common interest. "The folks who are trying to support Apple are making money off Apple in one way or another," said Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif. Ellison wants to tap into Apple's technological wizardry to help him construct a network computing empire.

Gates, for his part, hopes Apple can give Microsoft a leg up in its browser war with Netscape Communications Corp. by installing Internet Explorer as the default Web browser in Macintosh PCs.



SOMETHING FOR EVERYONE

Apple's Steve Jobs beamed down Microsoft's Bill Gates at Macworld last week.

What Apple gets:

- Microsoft commits to keep developing Macintosh versions of Office and other applications
- Increased investor confidence
- Possible restored faith among customers

What Microsoft gets:

- Internet Explorer browser installed in all Macintoshes
- An agreement that Apple will not pursue legal action against Microsoft regarding Windows
- $150 million worth of nonvoting Apple stock
- Great public relations

AP PHOTO

Gates also is betting that Apple will be a valuable ally in Microsoft's effort to defuse the Java programming environment threat posed by Sun Microsystems, Inc. (see story, page 53).

Apple will work with Microsoft to develop compatible Java Virtual Machines, which will allow all common Java applications to run on particular operating systems.

Microsoft also gets to come off as the good guy. "This is the best public relations expenditure that Microsoft has made in a long time," said Hadley Reynolds, research director for Delphi Consulting Group, Inc. in Boston. "It's ironic that Microsoft is cast in the role as the hero who will save Apple when they've done as much to destroy the company as anybody."

Rocking the Mac world

The multifaceted alliance with Microsoft revealed last Wednesday by Apple cofounder Steve Jobs stunned attendees at Macworld in Boston.

Jobs also announced the replacement of nearly all members of Apple's embattled board of directors. The new board includes Jobs and industry luminaries such as former IBM Chief Financial Officer Jerome York, Intuit, Inc. CEO William Campbell, and Ellison, a vehement critic of Gates.

While Macworld attendees looking for drama got more than they could have imagined, those looking for a preview of Apple products were disappointed.

Specifically, Jobs failed to address rumors that Apple will enter the fledgling network computer market, a notable omission given the addition of Ellison to the Apple board.

But it was the Microsoft deal that commanded the most attention, disbelief and even a chorus of boos among the Apple faithful when it was unveiled during Jobs' keynote address.

Under the scenario laid out by Jobs, Microsoft would invest $150 million in nonvoting Apple stock, would pay Apple another $100 million as part of a cross-licensing agreement involving each company's technology and would develop a version of its Office98 software for the Macintosh operating system.

If the point of Jobs' keynote speech was to draw the industry spotlight back to Apple, it succeeded spectacularly.

Well-seasoned board

Analysts agreed that the revamped board of directors may be more significant to Apple's future than the Microsoft agreement. "I'm extremely impressed with the new board," said Pieter Hartsook, editor of "The Hartsook Letter." "I think the odds of finding a world-class CEO and chairman who can turn Apple around are remarkably good today."

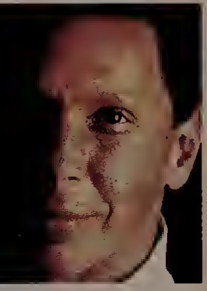
Enderle, however, called the new board a mixed bag. "Jerome York is the best in the business at doing stuff like this," he said. "Larry Ellison is a big negative. He will be a standing problem [Apple will] have to deal with."

As analysts continue to debate the merits of last Wednesday's moves, at least one Apple user said he has no problem with the Microsoft deal.

"I think it was a good thing," said Jeff Monti, a radar systems engineer for defense contractor Mitre Corp., in Bedford, Mass. "I would like to see them stay in business, and at least get back to 10% market share." ■

BUT WHAT ABOUT NCs?

"I have been using a Mac since 1984, and I am not about to stop," **said Larry Ellison, chairman of Oracle, NC bigot and now a member of Apple's board of directors.**



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Novell

Continued from page 1

with the National Board of Medical Examiners in Philadelphia.

Beta testers found few faults with the software, designed to sit on an IntranetWare server at the border of the Internet and the corporate network. Novell officials said Border Manager will be the company's most strategically important product next to NDS and could explode into a billion dollar business.

Sources close to Novell said Border Manager will hit the streets Sept. 17.

Moser said he uses a Border Manager snap-in to the NWAdmin program to manage his NetWare 4.X network. The snap-in lets him define Internet access rules via a nearly identical interface to the one he uses to define end-user access to LAN resources.

These rules are set up based on IP address, URL and content filters that track incoming and outgoing packets. Border Manager uses Novell's NetWare Multiprotocol Router and circuit-level gateways to screen IP and IPX packets.

For application-layer security, proxy software screens outgoing HTTP packets.

"My DOS-based firewall forced me to define access for everybody based only on IP addresses," Moser said. "Now I grant or deny access based on user objects in the NDS tree."

Gary Alu, a vice president with Las Vegas-based systems integrator Wilson, Beers and Alu, plans to recommend Border Manager to clients for everything but a primary corporate firewall.

"It will revolutionize the way you apply secure 'Net access rules, but still lacks some of the application-level security that Unix-based firewalls give you," Alu said. Specifically, he would like Border Manager to screen packets sent to his network via Simple Mail Transfer Protocol or Post Office Protocol 3 messaging applications.

Novell product manager Simon Kandah said future versions will offer application-level security for those and other protocols such as File Transfer Protocol and telnet.

The HTTP proxy also improves network performance by caching frequently accessed Web files, beta testers said.

The proxy cache increases delivery of Web content by 30% to 50% over using only an IPX/IP gateway, according to tests performed by Andrew Percy, president of San Jose, Calif.-based network consulting firm Puzzle Solutions, Inc.

The Guggenheim Museum in New York is using the proxy cache to open up unlimited Internet access to 150 employees without upgrading the leased line to the museum's Internet service provider, said Leonard Steinbach, the museum's director of information technology.

Users also are looking to get lots of mileage out of Border Manager's VPN service. This service allows users to establish an encrypted link between servers over the Internet.

San Jacinto College in Houston is testing the VPN service to support a long-distance learning program. Border Manager establishes a stronger VPN than Windows NT Server does via Point to Point Tunneling Protocol (PPTP), said Fred Towery, a computer science instructor at the college. "PPTP is OK for a private individual, but when you start talking about company information, you have to step up to the multilayered approach of Border Manager," he said.

Shortcomings of the VPN implementation include its inability to allow a stand-alone client or a non-Novell VPN server to establish a secure link with a Border Manager server, users said.

Novell's Kandah said these issues will be addressed when Novell upgrades Border Manager to support IPSec, an Internet security protocol still under debate by the Internet Engineering Task Force. ■

BORDER MANAGER'S HIT LIST

The package includes these new features...

- Virtual private network (VPN) support
- HTTP proxy caching and URL filtering
- Content filtering
- NWAdmin snap-in for granting user access to Internet
- IP-to-IP gateway

These existing Novell technologies...

- NetWare Multiprotocol Router
- IP-to-IPX gateway
- IntranetWare run-time for NDS ties
- NetWare Connect for remote access

But is still missing...

- Manageability from NT workstations
- Direct VPN client software
- VPN connection to non-Novell servers
- FTP, RealAudio, SMTP and POP3 application proxies

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Terminal

Continued from page 1

devices, supports an expandable subset of the Windows APIs, as well as Internet Explorer. In addition, it has built-in communications and multimedia support.

The 2.0 release of CE will add some important features, according to sources. It will support color. The graphics support also will be more flexible, to allow Windows applications to be converted more easily to run on CE devices. This required conversion does call the WBT's compability with Windows applications into question.

It will have improved memory management and other features to make it more functional as an operating system.

To be competitive with existing products, the WBT will need graphics capabilities at least comparable with today's PCs. The WBT also needs enough RAM to cache temporary data and graphics downloaded from the server, as well caching for a locally attached printer, sources pointed out.

The WBT will have at least 4M bytes of RAM for local caching and 4M bytes of ROM for Windows CE and other system software. The design guide is expected to leave the choice of processor open because Windows CE was designed so it could work with different CPUs.

The draft WBT design guide will be formally released to OEM partners such as Boundless Technologies, Inc. and Wyse Technology, Inc., during the next 60 to 90 days, said John Fredericksen, Microsoft product manager. "That's being conservative," he said.

The server on which the applications will run is called Hydra — software that will let terminals simultaneously access applications on Windows NT. Hydra is based on software licensed from Citrix Systems, Inc. and is expected to be fully integrated with NT 5.0, which is due in late 1998.

Microsoft will have to show that Hydra can efficiently handle scores or hundreds of clients, although, as Fredericksen points out, the exact number of supported users depends on the application.

Communications between the WBT and the Hydra server will be handled by the T.Share protocol, with Citrix's ICA protocol being used for non-Windows clients. T.Share is Microsoft's version of the proposed T.128 application sharing protocol standard. It is used now in Microsoft's NetMeeting product and was optimized by Microsoft engineers for low-bandwidth connections. However, for Hydra, T.Share is being tuned to make smart use of the high bandwidth in LANs and WANs, Fredericksen said.

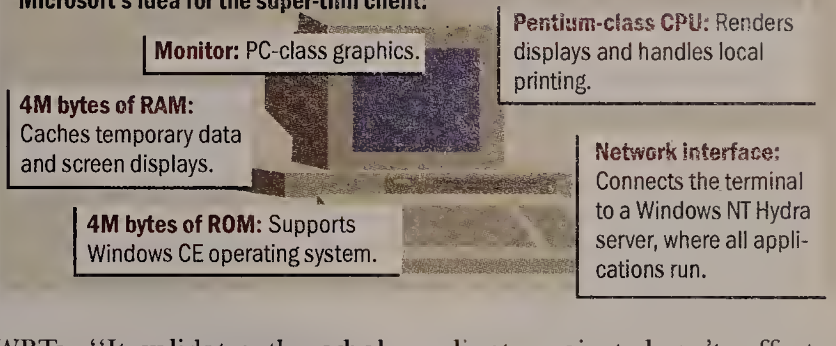
Microsoft can count on firm backing from some key terminal manufacturers that will build the WBTs. "It validates the whole thin-client architecture," said Jim Fulton, director of strategic planning for NCD, Inc., of Mountain View, Calif.

But it will be a slow-motion explosion, others caution. The full WBT benefits, even if the devices arrive next spring as expected, will not be felt until the arrival of Windows 5.0 in late 1998. "Anything that exists beforehand, you have to view as short term and tactical," cautioned Michael Gartenberg, research director with Gartner Group, Inc., of Stamford, Conn.

And some users are moving ahead, without waiting for Microsoft. "The Microsoft thin-client project hasn't affected us," said D.J. Jenkins, systems administrator for Retired Persons Services (RPS), Inc., the mail-order pharmacy arm of the American Association of Retired Persons, Alexandria, Va. "[There are lots of unanswered questions like] what is the official release date of the product? When will NT 5.0 be released? How stable is it?" ■

THE WINDOWS-BASED TERMINAL (WBT)

Microsoft's idea for the super-thin client:


Monitor: PC-class graphics.
Pentium-class CPU: Renders displays and handles local printing.
4M bytes of RAM: Caches temporary data and screen displays.
Network interface: Connects the terminal to a Windows NT Hydra server, where all applications run.
4M bytes of ROM: Supports Windows CE operating system.

Microsoft takes a bite out of Netscape

Microsoft Corp.'s rivals are under attack.

In exchange for $150 million and continued software commitments from Microsoft, Apple Computer, Inc. agreed to two provisions that could spell trouble for Netscape Communications Corp. and Sun Microsystems, Inc.

Apple agreed to make Microsoft's Internet Explorer 4.0 the standard browser on Macintoshes. Traditionally, Netscape's browser has been the default. "This is a real coup for Microsoft," said Chris Le Tocq, an analyst at Dataquest, Inc., in San Jose, Calif. "From a developer's standpoint, the question is do they want to develop for Netscape and Java or do they want to develop for Internet Explorer and ActiveX?"

Netscape downplayed the impact. "It's very much a 'public relations' event," said spokeswoman Jennifer O'Mahony. "Less than 10% of people wind up using the browser that is bundled with their hardware."

Apple also agreed to collaborate with Microsoft on Java. Specifically, Microsoft said it will help Apple make its Java Development Kit (JDK) run faster and work better with Microsoft's JDKs. Analysts speculated the deal could help Microsoft wrest control of the Java language from Sun. By controlling the JDKs on virtually the entire desktop computer market, Microsoft could set de facto standards.

But Sun disagreed. Jon Kannegaard, vice president of software products at Sun's JavaSoft division, said Microsoft isn't allowed to resell Java or JDKs under its license with Sun.

— Todd Wallack and IDG News Service

Switches

Continued from page 41

4. What's standard and what's not.

The answers affect how different vendors' switches interoperate or should interoperate — and how they don't or won't.

It will cost appreciably more to buy a switch that's a fully modular, chassis-based system, especially if it can handle switching between different high-speed LAN technologies — 100Base-T, FDDI and ATM, for instance.

If all you need is Ethernet and Fast Ethernet, though, you're in luck. So-called 10/100 switches are plummeting in price and indeed are fast-approaching commodity status. For a fixed-configuration 10/ 100 switch, you can buy a lot of backbone switching capacity for as little as $250 per 100M bit/sec port.

Expect to pay a good deal more for a modular and multislot switch, which lets you swap out some or all ports for different speeds, media and even different high-speed LAN technologies. If you're planning to span end-to-end distances of more than about 100 meters with 100Base-T, you'd better plan on at least some 100Base-FX ports. That's the Fast Ethernet equivalent over a pair of multimode optical fiber strands.

A 100Base-FX link will take you a little more than 400 meters in "normal" Ethernet/Fast Ethernet mode, called half-duplex. For longer distances, up to a couple of kilometers, you'll need to set the link to full-duplex.

And be sure to check the switch's media access control (MAC)-address table capacity. The switch should be able to concurrently maintain as many different MAC addresses as can be expected to communicate through the switch during a few hours on a busy net.

The main reason for this is because all switches treat "address unknown" packets like broadcasts, flooding them out on all ports. You'll often save bandwidth in the long run if the switch takes a few microseconds more to look through a large address table.

Indeed, broadcast and multicast packets are the Number 1 nemesis of switched networks. There are only two ways to constrain their proliferation — subdivide your switched network with strategically placed routers or deploy virtual LANs.

Be aware, though, that no two vendors' VLANs are exactly the same. And for now at least, don't expect vendors' VLANs to interoperate. The intricacies of VLANs are too numerous to discuss in detail here. But as a potential buyer of switches, be sure of the following:

- Have some idea what your broadcast/multicast packet load is, and subsequently, whether you're likely to need VLANs to control this traffic.
- Thoroughly understand how the particular switch vendor's VLANs work and whether the VLAN structure (port-based or MAC address-based) suits your requirements.
- Exercise the VLAN management application offered by the switch vendor. If it takes more than a couple of minutes to move a station from one VLAN to another, consider the additional administrative burden on you and your staff.

VLANs are one of the aspects of LAN switches that aren't standard today (although progress is being made). But there are other key areas related to switching that the standards don't yet address. These areas include load balancing over multiple links and redundant failover of parallel links - both of which can improve reliability of your switched network.

The bottom line: The more state-of-the-art your switched network becomes, the more likely it will incorporate vendor-proprietary capabilities and features. The trade-off for advanced functionality, then, is interoperability. But isn't that usually the case in networking? ■

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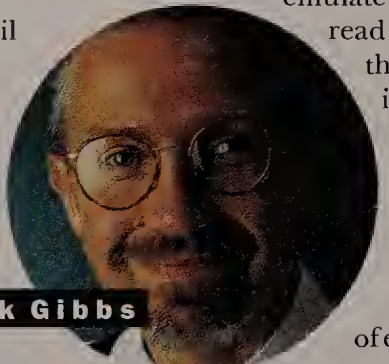
Backspin

The search for Culprit Zero: Misinformation and you


Mark Gibbs

A fascinating event unfurled last week that has me wondering about the dangers of misinformation.

Someone, somewhere on the Internet sent out a message that contained what was supposed to be a commencement address at MIT given by the writer Kurt Vonnegut.

I received a copy of this on August 1 from my colleague Gil Gordon, who had received it from heaven-knows-where, who had received it from ... and so on.

The piece began:

"Ladies and gentlemen of the class of '97: Wear sunscreen.

If I could offer you only one tip for the future, sunscreen would be it. The long-term benefits of sunscreen have been proven by scientists, whereas the rest of my advice has no basis more reliable than my own meandering experience. I will dispense this advice now."

(If you want to read the full speech, send a message to culpritzero@gibbs.com and a copy automagically will be sent to you.)

The speech was certainly in a style similar to Vonnegut's work (if you haven't read novels such as *Breakfast of Champions* and *Cat's Cradle* you should rush out and buy them right away; they are wonderful). So when I got it, I sent it out to my joke distribution list (if you want to subscribe send a message to JokeServ@gibbs.com with the subject line of "subscribe").

On the Internet, I doubt whether anyone's reputation has been irreparably harmed . . . yet.

Several people on my list have their own lists, so I contributed to the exponential growth of copies that spread, literally, worldwide.

I thought no more about this until I got a message the next day from Peggy Watt, who writes for *Network World's* monthly *IntraNet Magazine.* It contained a posting from the alt.folklore.urban newsgroup. The message referenced another message from rec.arts. sf.fandom by a colleague of Vonnegut's who said that the so-called commencement address had nothing to do with Vonnegut.

The original author had been identified as Mary Schmich, a columnist for the *Chicago Tribune.* Someone had posted the column to the 'Net and attributed it to Vonnegut.

Today, I received a copy of a very good column Ms. Schmich wrote about the event (which, if you retrieve a copy of the original piece, you will find appended).

Ms. Schmich says she was not trying to emulate Vonnegut. In fact, she had read only one book by him and that was years ago when she was in college! As for who attached Vonnegut's name — she refers to that person as Culprit Zero — she has no idea. She tried to backtrack but got nowhere.

This is a fascinating series of events for one reason — the ease with which misinformation is spread. And it is not unusual. Just check the "Urban Legends Reference Pages" at www.snopes. com/ or the newsgroup mentioned above — alt. folklore.urban.

Now, while the bogus Vonnegut speech was essentially harmless, there are other globs of misinformation that might trigger more serious consequences. On the Internet, I doubt whether anyone's reputation has been irreparably harmed or any really serious events sparked by misinformation . . . yet. But, mark my words, it will happen.

And what about inside corporations? E-mail races from employee to employee at a phenomenal speed. What damage could a corporation suffer from a well-placed fraudulent message?

When I was at Novell U.K. (many years ago) we got a message presumably from the CEO Ray Noorda. It said he had heard the European staff was not happy with European management, and as we were all one happy family, etc., etc., he'd like to know what the staff thought. Several staff members replied, in detail and at length, and, of course, the message wasn't from Ray at all. But he got their thoughts all the same.

We never found Culprit Zero either.

Which leads me to question: What are you going to do about misinformation in your corporation? Culprit Zero could do you a lot of harm. (I never did find out what happened to the people who responded to the bogus Ray Noorda message.)

So, my comrades, send me a real message and let me know what you're going to do at nwcolumn@gibbs.com or at (800) 622-1108, Ext. 504.

'NET BUZZ

The latest on the Internet/intranet industry

By Chris Nerney

A LITTLE EXTRA FOR EXTRANET START-UP **New Oak Communications, Inc.** tommorrow will announce a $7.5 million second round of financing in preparation for a product launch later this year.

President and CEO **Jeff McCarthy** said the Acton, Mass.-based company will sell "hardware and software that provides enterprise accounts with extranet access."

McCarthy declined to divulge product details, but said the market is looking for "full features in terms of tunneling, encryption, security, firewalling, authentication and authorization." Hmm. Sounds like an extranet router to us.

The funding comes from **North Bridge Venture Partners, Venrock Associates** and **Highland Capital,** the same firms that financed an initial $4.3 million round last November.

New Oak was founded last year by former Forrester Research, Inc. analyst **Tom Pincince,** who is currently executive vice president of the start-up. McCarthy comes from ATM equipment start-up **Cadia Networks, Inc.,** which was acquired in January by **FORE Systems, Inc.** He also had spent eight years at **Bay Networks, Inc./Wellfleet Communications.**

As for the company's name, McCarthy says "new oak" is a term used in vineyards. "When the wine starts to have a woody taste, it's put in a new barrel, and that's called 'new oak.'"

NO COMPANY IS AN ISLAND, EXCEPT THIS ONE We heard Hawaii is expensive, but this is ridiculous.

Just a few months after securing $4 million in venture capital, **Digital Island, Inc.** of Honolulu is back for more. The company has just closed an agreement with its original investors — **Vanguard Venture Partners, Crosspoint Ventures** and a few others — for a second round of $7.5 million in financing.

Digital Island markets high-speed Internet access to multinational corporations that seek to avoid the costly congestion of the public Internet. The company, founded in 1995, has set up its own IP network, which currently has 18 POPs (points of presence) on four continents.

The $7.5 million is earmarked for expansion plans; Digital Island hopes to have 30 POPs by year's end.

We're not sure what the company charges for its services, and we're still puzzled as to why they needed more venture capital so quickly. Therefore, solely in the interests of our readers, we will propose to our editors a **'Net Buzz** fact-finding mission. We figure about two weeks should do it.

MARK YOUR CALENDAR WITH MULTIMEDIA Start-up **Amplitude Software Corp.** soon will announce a $1 million second-round investment from **Menlo Ventures.** The Tiburon, Calif.-based company received a $2.5 million initial round of financing in November 1996 from Menlo and some private investors.

Amplitude sells Web-based resource scheduling and calendaring applications for intranets, extranets and electronic commerce Internet sites.

Its latest product is EventCenter, which enables even the **office dunce** to publish and update event information directly to the Web without knowing coding. We know because we tried it out — that is, so we've been told by reliable sources.

Listings can include multimedia information such as video, graphics, hyperlinks and sound.

The product also has a nifty subscription feature, so users who sign up for a particular calendar will be automatically e-mailed when any updates are made.

EventCenter can be used with any browser and requires no client software. It runs on Windows NT and will be available Aug. 25 for $2,995.

We'll be in Hawaii for a couple of weeks, but still will be available to hear your best Internet- and intranet-related news. Contact Chris Nerney at (508) 820-7451 or cnerney@nww.com. All right, we can dream, can't we?

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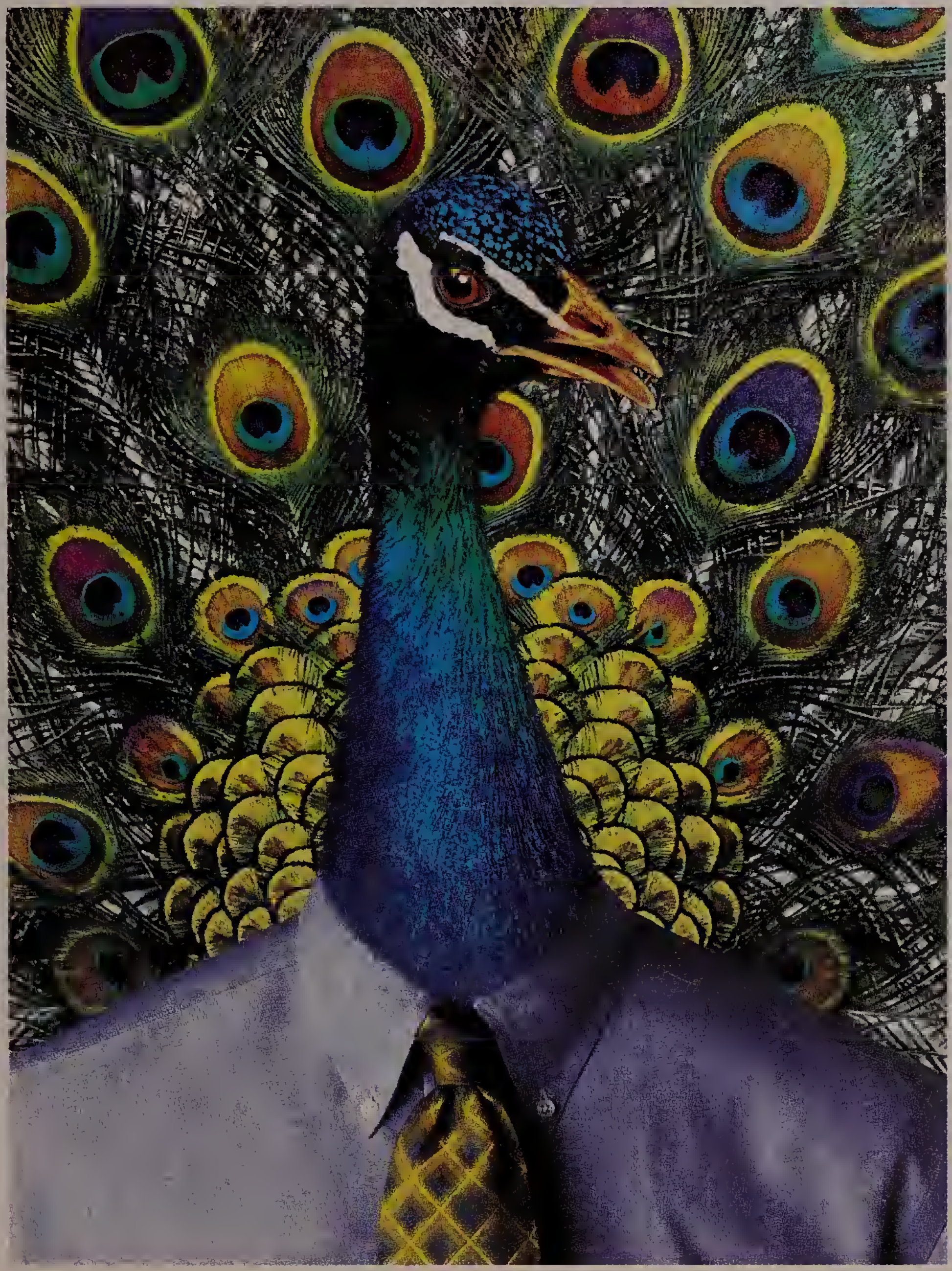

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